SAFETY MAINTENANCE & PRODUCTION

FORMERLY SAFETY ENGINEERING

AMERICA'S PIONEER MAGAZINE IN ITS FIELD

EST. 1901

NOVEMBER, 1952
FIFTY CENTS

Now . . . Seams Reduced to **ABSOLUTE MINIMUM** on these NEW AO Gloves!

HAND PROTECTION

AO 514 ASBESTOS GLOVE

Yes, for workers' comfort . . . for savings for our customers, we've redesigned our asbestos glove line to eliminate seams wherever possible. By reducing seams from 8 to 3, there's not only greater working ease for the user but longer work life for the glove.

MAKE THIS COMPARISON TEST!

Look at any conventional asbestos glove. Note the vertical seams that extend to the cuff. Note the seams that secure gauntlet to glove. Now check against the large photograph here. You'll see the seams on the thumb and only ONE SEAM extending the length of the glove (on the back). Note also the absence of horizontal seams—(thus assuring a stronger glove and longer life which means valuable savings).

AO 1514 Glove with leather-reinforced palm.

AO 2514 Glove with asbestos-reinforced palm.

AO 3514 Glove with full leather-reinforced palm and finger area.

QUICK FACTS:

- Finest grade specially treated asbestos, recommended for extreme heat.
- Yarn is closely woven.
- Double stitched for long service.

AO's Industrial Vision Program increases production, decreases accidents. Write today for free booklet "Improved Industrial Vision" to 1113 Vision Park, Southbridge, Massachusetts.

American Optical
COMPANY
SAFETY PRODUCTS DIVISION

SOUTHBRIDGE, MASSACHUSETTS • BRANCHES IN PRINCIPAL CITIES

For full details, use Key # S-1 on prepaid Inquiry Card on page 77

HY-TEST

the ONLY Safety Shoes with

BoL Tan®

Sweat-resistant Leather Insoles!

H754-4
Men's 8 inch Brown Glove Blucher, Neocord outsole, Leather midsole, Neocord heel, Anchor Flange Steel Box Toe, Protector Last, BoL Tan leather insole.

H713-3
Men's Black Glove Blucher, Neocord out sole, Resist Oil midsole, Neocord heel, Anchor Flange Steel Box Toe, Protector Last, BoL Tan leather insole.

ADD UP TO TWICE THE WEAR!

No other safety shoe offers the benefits of the exclusive, new *BoL Tan* sweat-resistant leather insole. HY-TEST Safety Shoes now increase worker comfort and productiveness with *BoL Tan* leather insoles in every pair.

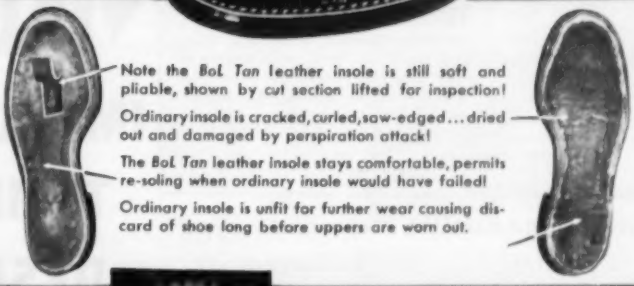
The life of any shoe depends on the insole. That's why *BoL Tan* sweat-resistant leather insoles extend shoe life as much as 100%, because they withstand the damaging effects of foot perspiration.

This means that your workers and all wearers of safety shoes can increase the *value* of their purchases and be more comfortable while at work when they buy and wear HY-TEST SAFETY SHOES.

Only the BoL Tan leather insole resists the damaging effects of perspiration!

AT NO EXTRA COST!

Here are two insoles from a single pair of shoes worn in a foundry for seven months. The one from the left shoe is a *BoL Tan* leather insole; the other is a regular quality leather insole.



Note the *BoL Tan* leather insole is still soft and pliable, shown by cut section lifted for inspection!

Ordinary insole is cracked, curled, saw-edged... dried out and damaged by perspiration attack!

The *BoL Tan* leather insole stays comfortable, permits re-soling when ordinary insole would have failed!

Ordinary insole is unfit for further wear causing discard of shoe long before uppers are worn out.

HY-TEST

ANCHOR FLANGE*

SAFETY SHOES

*TRADEMARK REG. U. S. PAT. OFF.

The World's Largest Selling Safety Shoe

Division of International Shoe Company, St. Louis 3, Mo.

New York Office: Suite 1708, 225 W. 34th St.

HY-TEST SAFETY SHOES

Use this handy coupon for details on HY-TEST's BoL Tan leather insoles

HY-TEST SAFETY SHOES, Dept. SII
Division of International Shoe Company
St. Louis 3, Missouri

Please send me free copy of your folder explaining the advantages of BoL Tan leather insoles.

Name.....

Firm.....

Address.....

City.....Zone.....State.....

For full details, use Key # S-2 on prepaid Inquiry Card on page 77

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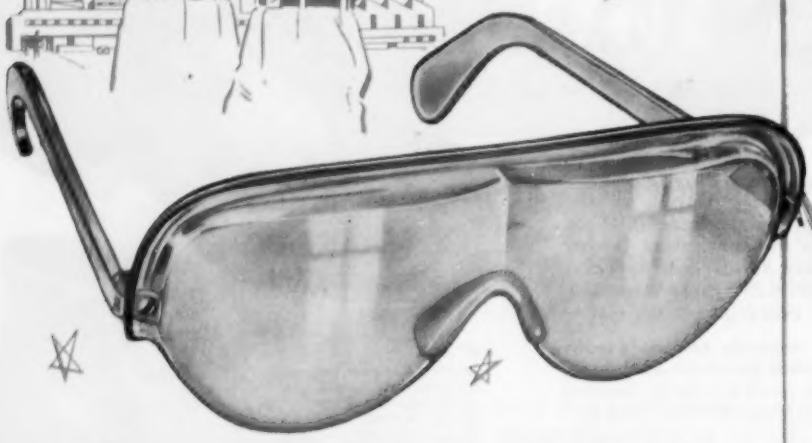
THE "SPECTACLE" TO SEE BEFORE YOU BUY!



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NEW PATENTED TEMPLE ATTACHMENT!
Specially designed screw and metal end piece positively locks temple to lens. Lens can be changed almost instantly and no special tools are required.

NEW IMPROVED TEMPLE DESIGN

Offers MAXIMUM "spectacle-type" IMPACT PROTECTION

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- Comfortable—lightweight—Velvet soft nose piece.
- Rugged—tough—Meets Federal spec. for impact.
- Lens made of Optilite ⓞ Optically correct.
- Low original cost—Low cost replaceable lens.
- Employee acceptance—Feather-lite comfort.
- Lens also interchangeable with SAF-I-DUO, safety goggle.

Write for literature and prices.

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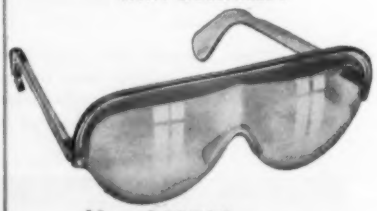
SAF-I-SHIELD
SAF-I-FLEX
and
Safety Goggles
SAF-I-DUO

U.S. SAFETY EQUIPMENT & ENGINEERING

No. 241003
—ALL CLEAR

No. 242003
—ALL CLEAR
WITH SIDESHIELDS



No. 241503
—ALL CLEAR
WITH GREEN TOP

No. 241123
—ALL GREEN
ANTI-GLARE

No. 242123
—ALL GREEN
WITH SIDESHIELDS

UNITED STATES SAFETY SERVICE CO.

KANSAS CITY 6, MISSOURI BRANCHES IN PRINCIPAL INDUSTRIAL CITIES
In Canada PARMELEE, LTD. Toronto

For full details, use Key # S-3 on prepaid Inquiry Card on page 77

THE BIGGEST SHEET.... BEST WAY AND A BARGAIN

ARE YOU A MANUFACTURER?

American Can, Graybar, Alcoa, Johns-Manville, National Carbon, U. S. Rubber, Eastman, International Harvester, Union Carbide, Air Reduction, American Brass, Westinghouse, Ingersoll-Rand, etc. USE MAGIC LENS TISSUE.

A REFINERY?

Sun Oil, Ethyl, Socony-Vacuum, Texas Company, Atlantic, Carter, Cities Service, Shell, Gulf, Marlin, Continental, Esso, Phillips, Standard of New Jersey, Ohio, California, Indiana, Texas, etc. USE MAGIC LENS TISSUE.

A MINER?

Anaconda, Kennecott, Hanna, Colorado Fuel & Iron, Consolidation Coal, Clinchfield, Old Ben, Hudson's Bay, U. S. Gypsum, New Jersey Zinc, Homestake, American Smelting, National Lead, etc. USE MAGIC LENS TISSUE.

A MILL?

Rayonier, Forstmann, General Foods, General Mills, Gair, Springs Cotton, U. S. Steel, Youngstown, Bethlehem, Inland, Hercules Powder, Universal Atlas Cement, International Paper, etc. USE MAGIC LENS TISSUE.

A PROCESSING PLANT?

Allied Chemical, Westvaco, Monsanto, Lilly, Celanese, Reigel, P. & G., Jergens, Mathieson, Koppers, Ansul, American Viscose, Amalgamated Leather, Swift & Co., Staley, Schenley, National Distillers, etc. USE MAGIC LENS TISSUE.

A PRECISION PRODUCER?

I.B.M., Remington-Rand, Sperry, Winchester Arms, Underwood, Gamewell, Marlin-Rockwell, Fairchild, U. S. Automatic Corp., United Shoe Machinery, Anchor Hocking Glass, DuMont, Zenith, S.K.F., Sylvania, Western Electric, R.C.A., etc. USE MAGIC LENS TISSUE.

A LABORATORY?

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THE BEST METHOD —BUY TODAY

▲ *what such users save*

IN ACCIDENTS, POOR PRODUCTION, TIME AND MONEY

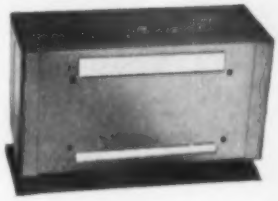
you can save

Science's answer to foul sight. For every safety and production man and every insurance company knows goggles and glasses stay dirty, dangerous and inefficient *unless you make it easy as possible* for workmen to keep them crystal-clear.

Official government statistics estimate poor-seeing holds back production and inspections anywhere from 25 to 40%. Say goodbye to this costly problem. MAGIC LENS TISSUE deposits a protecting silicone film which instantly makes goggles and glasses sparkle and preserves clear vision like magic. Used because it is easy to use—easy as lifting your finger.

Each sheet is 50% larger than usual . . . *yet it costs you less.* Each refill carton contains 6 instantly Ready-to-Use packets (800 interfolded jumbo-sized super-strong sheets per packet) at only $8.40 per carton. No waste. No fluid. Nothing to squirt. No cumbersome cabinet or complicated Dispenser. And no other cleaning station has our SELF-MOUNTING feature. The compact, SELF-MOUNTING Dispenser, not much bigger than a man's fists, costs only $2.50. All prices F.O.B. our factories. Write us or order through your Safety Supplies Jobber today. Save time, trouble, money and many a disaster. Complete your simple installations NOW.

NO SCREWS OR DRILLS NEEDED... JUST STICK IT TO THE WALL



Exclusive feature! Notice Adhesive Mounting Strips on back of Dispenser. Absolutely hold to machinery, metal, wood, glass, tile, steel girders, plaster walls or any smooth surface. No screws, nails, hammering or drilling. No skilled labor, time, trouble or installation cost. *Instantly installed anyplace.*

▼

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Magic Lens Tissue

T. M. REG. U.S. PAT. OFF.

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The Silicone Paper Company of America, Inc.

The World's Largest Producer of Silicone Papers

Interfolded sheets · Flat sheets · Rolls

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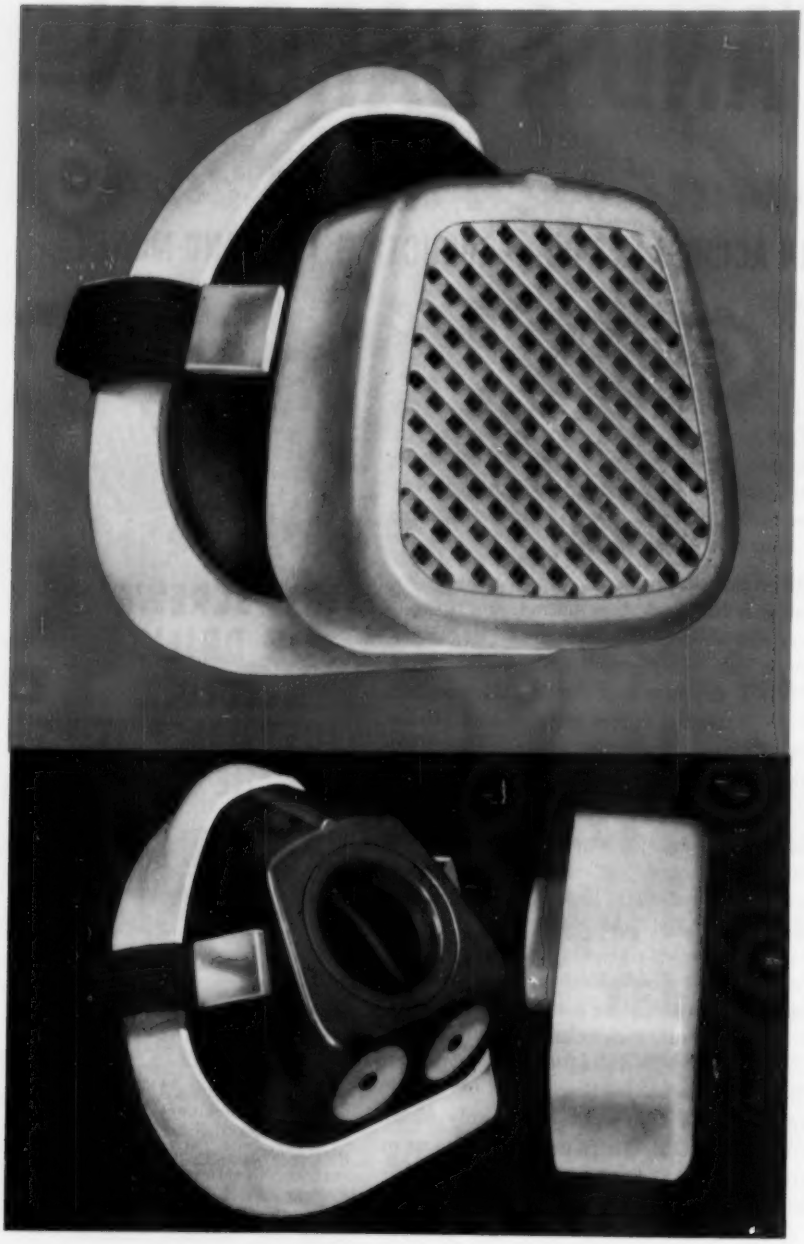
The NEW M·S·A GASFOE

RESPIRATOR—



Gets on the GOOD SIDE of workers

Keeps workers on the SAFE SIDE of hazards

For nuisance exposure to light concentrations of organic vapors and acid gases

Because it gives workers what they want in respirator comfort and protection, the new M.S.A. Gasfoe is tops in acceptance value. It's light, good-looking, compact. There are no distracting corners or edges to block vision; the "closed in feeling" that hinders worker comfort and efficiency is eliminated. The filtering action of the cartridge keeps the worker safe.

It's designed for economy, too. All parts are independently replaceable. In seconds you can replace any element that has worn out after extended service and send a good-as-new respirator back on the job. Our bulletin gives complete facts. Write for it today.

- ✓ **Smart, modern design combats workers' resistance to respirator protection**
- ✓ **So light, users hardly know they're wearing it**
- ✓ **Compact, streamlined design gives greater job vision, comfort**
- ✓ **Replaceable parts bring economy, longer service life**
- ✓ **Easily changed, factory-packed cartridges assure peak protection**

MSA
SAFETY EQUIPMENT HEADQUARTERS

Call the M.S.A. man on your every safety problem . . . his job is to help you.

MINE SAFETY APPLIANCES COMPANY
BRADDOCK, THOMAS AND MEADE STS., PITTSBURGH 8, PA.
At Your Service: 68 Branch Offices in the United States
MINE SAFETY APPLIANCES CO. OF CANADA, LIMITED
Toronto, Montreal, Calgary, Winnipeg, Vancouver, New Glasgow, N.S.
Representatives in Principal Cities in Mexico, Central and South America
Cable Address "MINSAF" Pittsburgh

For full details, use Key # S-5 on prepaid Inquiry Card on page 77

Doehler-Jarvis Corporation, world's largest producer and finisher of die castings, utilizes energy in color in huge Toledo, Ohio, plant to improve working conditions.

Pittsburgh Color Dynamics

Increases production efficiency . . . Lowers manufacturing costs . . . Reduces accident time loss

How Pittsburgh COLOR DYNAMICS helps management and workers alike is being demonstrated daily in a wide variety of industries.

● **This modern method** of putting the *energy in color* to work helps to increase production efficiency and lower manufacturing costs at the same time that it improves working conditions, simplifies housekeeping and reduces time-loss accidents.

● **An excellent example** of these results is the large Toledo, Ohio, plant of the Doehler-Jarvis Corporation.

● **This company** is the world's largest producer and finisher of die castings. Its experience in this field dates back to 1905, when H. H. Doehler invented the first metal die casting machine. Today the Doehler-Jarvis Corporation makes castings for motor cars and trucks, radio and television sets, household appliances, business machines and a great many other products.

● **The huge Toledo plant** was painted according to COLOR DYNAMICS several years ago. The benefits from this are best summarized by Robert H. Kitzman, vice-president in charge of manufacturing:

● **"As in most factories,** it had been our custom to paint our plant and equipment periodically to protect it from wear and deterioration. Then we decided to color-engineer our facilities the COLOR DYNAMICS way.

● **"By using *focal* colors** on working parts of machines, in contrast to *eye-rest* colors on stationary parts, we help our men to see their work better. By using eye-rest colors on walls, as well as colors with high light reflection on ceilings, we further reduce eye strain. This lessens physical fatigue.

● **"*Safety* colors** which mark hazard areas help to reduce danger of accidents. These improvements give us better workmanship, greater volume, higher morale and a better relationship between management and employees."

● **Why not test the practical value** of COLOR DYNAMICS in your plant. Use this modern painting system to put color to work on a machine or two—or in a complete department—and see the difference it makes.

COLOR DYNAMICS Engineering Study of Your Plant — FREE!

● For a complete analysis of the service COLOR DYNAMICS can perform for you, send for our *free*, profusely illustrated booklet. It explains simply and clearly how to put color to work on machines, walls, floors, ceilings and mobile equipment. Better still, let us show you exactly how to apply it in your plant. We'll be glad to submit a color engineering study of your entire factory, or any part of it, without cost or obligation. Call your nearest Pittsburgh Plate Glass Company branch and arrange to have our COLOR DYNAMICS representative see you at your convenience. Or mail this coupon.

SEND FOR A COPY OF THIS BOOK!

Pittsburgh Plate Glass Co., Paint Div.
Dept. SM-112, Pittsburgh 22, Pa.

☐ Please send me a FREE copy of your Booklet *"Color Dynamics."*

☐ Please have your representative call for a Color Dynamics Survey without obligation on our part.

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PITTSBURGH PLATE GLASS COMPANY

WITH WAXES CONTAINING ANTI-SLIP "LUDOX"

Anti-slip Du Pont "Ludox" gives floor wax a unique snubbing action. When your foot hits the floor, tiny, hard particles of "Ludox" are pushed into larger, softer wax globules. This causes the foot's forward-moving energy to be absorbed quickly and safely—helps keep the foot from slipping.

Besides giving far safer footing, floor waxes improved with "Ludox" have extra hardness. And along with these outstanding advantages, all the basic qualities of gloss, water-resistance, freeze-resistance, and leveling are maintained in properly formulated waxes.

Many safety and sanitation engineers now specify waxes made with "Ludox." And even if yours is the exceptional case, a wax made with "Ludox" should fit your needs. A variety of formulations is available for business, industry, and institutions.

Ask your wax supplier to show you his waxes containing anti-slip "Ludox." Or write for more information today. E. I. du Pont de Nemours & Co. (Inc.), Grasselli Chemicals Dept., 4147-S Du Pont Bldg., Wilmington 98, Delaware.

DU PONT
REG. U. S. PAT. OFF.

LUDOX
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COLLOIDAL SILICA

150th Anniversary

Better Things for Better Living
...through Chemistry

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WILLSON®

plastic protective equipment

keep you on the safe side

WILLSON MONOGOGGLES®

Workers wear Willson protective equipment willingly because these MonoGoggles® and other safety devices shown are lightweight and comfortable. MonoGoggles® illustrated above are available in flexible *Polythene* and fully transparent *Acetate* for extra side vision. Interchangeable lenses in clear plastic or Tru-Hue green. Ask for Willson—the leading line of respiratory and eye safety equipment for industry, farm and home use.

Choice of clear or green plastic visors

WILLSON PROTECTO-SHIELD®

gives full face protection with a choice of 4", 6" and 8" visors. Ideal for many industrial operations. Also available with full flare at sides for extra protection against chemical splash.

Weighs less than an ounce!

WILLSON FEATHERSPEC®

. . . specially designed for light-duty operations. Comfortably worn over prescription glasses. Their clear or Tru-Hue green plastic lenses can be switched in a few seconds.

For prompt safety service

CONSULT YOUR . . .

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Interstate Machinery & Supply Co.
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SAFETY MAINTENANCE & PRODUCTION

FORMERLY "SAFETY ENGINEERING"

The Magazine of Safety

A MONTHLY PUBLICATION DEDICATED TO ACCIDENT PREVENTION, MAINTENANCE, HEALTH CONSERVATION AND FIRE CONTROL FOR EFFICIENT PRODUCTION.
EST. 1901

VOL. 104, NO. 5 NOVEMBER, 1952

EDITORIAL

Are We Making Progress? 10
Rehabilitation 10

★ ★ ★

Inside a Safety Engineer 13
How to Maintain Electrical Equipment ..... by JOSEPH PETRUSKA 14
Find Fires Promptly (fire protection series) ..... by P. C. HENSLER 18

★ ★ ★

Daydreams Can Become Nightmares—A Safety Illustration 23
The Safety Engineer Rolls Up His Sleeves: Part 2 .. by STANLEY F. SPENCE 25
Discharge Your Static Electricity (flooring materials series) 29

★ ★ ★

Optical Plastics Come of Age 31
Miner's Lamps Aid Airplane Maintenance 33
Automatic Control of Carbon Monoxide 45
Dust Removal's a Must (dust & fume control series) 66

★ ★ ★

REGULAR DEPARTMENTS

Transportation Safety 44
SAFETY MAINTENANCE & PRODUCTION Salutes a Safety Idea 48
Learning the Hard Way 54
The Future Shows 62
Industrial Hygiene 65
The Industrial Nurse 70
What's New in the Safety-Maintenance Field 74
Free Bulletins & Catalogs 77

SPECIAL DEPARTMENTS

Inside the Trade 50
The Fire Front 56

★ ★ ★

Free-Postage Reader's Inquiry Card 77
Index to Advertisers 78

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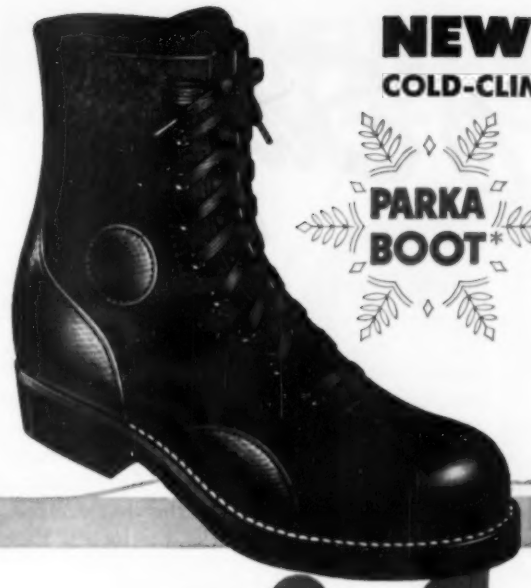

NEW!
COLD-CLIMATE
PARKA BOOT*

Stock No. 1801 — A revolutionary new construction that affords great warmth and comfort plus steel toe protection in sub-freezing temperatures. Thick, fleecy FELT throughout, with scuff-protectors at every point of wear; unique "reflector" lining under steel prevents frozen toes. Plastic outsole permits indoor-outdoor wear. **Ideal inside galoshes for ice, snow, freezing slush.**

anti-freeze

8-INCH LACE-TO-TOE BOOT Stock No. 1917

Top-grade boot with oil-resistant Neocord soles; solid leather, leather-lined, leather reinforced. Finest, toughest boot we know how to make.

10-INCH ENGINEER'S BOOT Stock No. 1914

Handsome, heavy-duty field boot with oil-resistant Neoprene composition soles, moisture-tight caulk welt, tough Dacron stitching.

*T.M. REG.

LEHIGH
SAFETY SHOE COMPANY
ALLENTOWN, PA.

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It's Safe to Say

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★ ARE WE MAKING PROGRESS?

A STATISTICALLY minded reader, blessed with the long memory usually associated with elephants, tells us that for upwards of fifteen years we have been told that about 10% of all industrial accidents are caused by unsafe mechanical or physical condition; approximately 88% can be charged to unsafe acts of persons and about 2% are classified as Acts of God. According to this safety director, we are given the same figures today and he wonders aloud if we are making any progress in our goal.

He reasons that if present safety directors and successive classes of prospective safety engineers are supposed to have been devoting their energies to accident prevention effort for years and the figures quoted are still being dinned into the ears, what—if any—progress can be claimed for accident prevention activities.

Our reader arrives at the conclusion that the percentage of Act of God accidents should be increasing if we are really making progress in reducing the toll of accidents chargeable to unsafe acts of persons.

It would seem logical to assume that the percentages in this analysis can remain relatively steady and yet great strides on the road to safety can be seen. In the first place, the ranks of the industrially employed have grown to almost unprecedented numbers. New employees who were small children fifteen years ago are entering industry to take the place of retiring workers. Those new faces assure the continuing need for safety indoctrination.

Fortunately, we need not contemplate the possibility that progress is lacking. The final figures of the dead and injured, while still far too high, show that proportionately casualties at work are no higher—and in many industries—much lower than was the case when American industry was operating in low gear. If that isn't progress then we shudder to think of what would be our national and individual plight were all accident prevention effort to be brought to an abrupt halt.

Figures can be juggled around and it would be a simple matter to say that in the light of accident prevention effort, unsafe personal acts are now responsible for just 75% of all accidents and the remaining 25% charged to Acts of God. At first glance, it would then appear that human frailties have been brought under greater control but we know that with millions of new workers, plus a longer working span for those whose reflexes and thought processes are no longer so elastic, unsafe personal practices will continue to lead the list of accident causes if we had ten times as many safety directors as are now employed. As a matter of conjecture, we often wonder whether too many accidents aren't even now being laid at the feet of Providence.

★ REHABILITATION

It is good to see any phase of accident prevention reach the widest possible audience. In a unique program presented over a national television chain recently, proper tribute was paid to the far-sighted policies of the presidents of three leading American companies, one of whom was chief executive of a leading casualty insurance organization.

The point was made that contrary to ill-informed opinion, insurance companies writing workmen's compensation insurance are first of all interested in *preventing accidents* but in every case, once a tragic misfortune occurs, those companies and their affiliates are spending vast sums of money to get the man back on his feet, literally and figuratively.

The insurance interests know what the worker should know and that is that no amount of disability payments can compensate for loss of full wages and human suffering in which the injured himself is not always the only victim. Those companies know that their work of rehabilitating the injured pays off in well-being, goodwill and actual dollars and it is high time the general public is given the benefit of this knowledge.

★ CONVENTION PROCEEDINGS

As this issue goes to press, the Annual National Safety Congress will be opening in Chicago and therefore it is not possible to bring to readers of the November number of SAFETY MAINTENANCE & PRODUCTION proceedings of the largest safety congress and exposition of the year.

Highlights of the convention will be presented in the December issue for the benefit of those who were not able to attend.—H.A.

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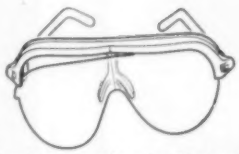

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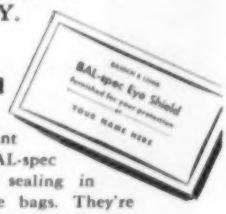

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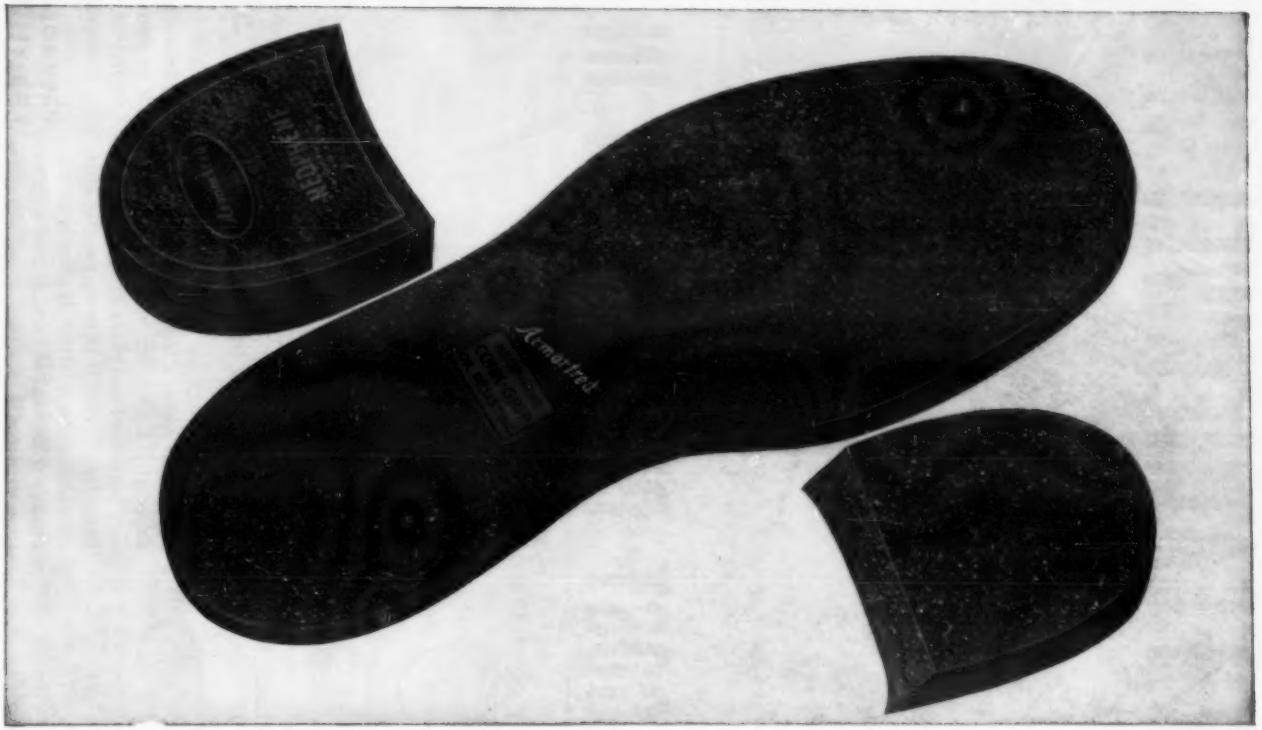

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SAFETY MAINTENANCE & PRODUCTION
VOL. 104, No. 5 • NOVEMBER, 1952

INSIDE A SAFETY ENGINEER

Hard knocks (two in fact) prompted this safety engineer to take up accident prevention as his life work.

VERN SNYDER started thinking about safety as a career after he was a hit-and-run victim for the second time.

The first time it was a run-away team of horses; the second, an automobile. Both accidents occurred in Hammond, Ind., his home town.

"I was knocked flat by the horses," says Vern, "but I was just a kid and was able to jump up and run away. The auto put me in the hospital with a shattered right leg for 19 weeks and a year's convalescence at home. That was in 1934. I was on my first job . . . in personnel."

Vern recalls that the auto that ran him down jumped a curbing and struck him from the back as he was walking on a sidewalk. Ironically enough, several years later he was to be elected president of the Hammond Safety Council!

Formal courses in safety were few and far between in Vern's younger days—Illinois Tech was one of the first institutions of higher learning to offer a degree in this subject. Since going into safety, he has sandwiched in courses at the University of Illinois and Northwestern University.

During World War II, he was supervisor of safety for the U. S. Rubber and DuPont Companies at the Kankakee Ordnance Works, Joliet, Ill., and was a dollar a year man for the Committee for the Conservation of Manpower in War Industries. The latter group concentrated on smaller industries that could not afford safety programs.

While at DuPont *(To page 34)*

HOW TO MAINTAIN ELECTRICAL

Here are some hints on how to set up an efficient maintenance program for electrical equipment.

DURING the past ten years electrical maintenance has assumed more importance than ever before. This calls for better administration and planning on the part of the men charged with supervising this work.

There is no set of rules to cover the amount of personnel needed for an Electrical Maintenance Group for so much horsepower or so many motors or machines. The number varies widely from one plant to another and it is a waste of time to make comparisons unless one knows all the facts.

Supervisors in the Electrical Maintenance Group should be selected for their education, electrical knowledge, initiative, ability. They must be the men who can work harmoniously with the other trades supervision and the union representatives, and avoid loss of time due to petty grievances.

A line organization should be set up and all orders should go down through the regular organization chart, and information and questions should come up the same way. This is a difficult rule to follow but nothing upsets a supervisor more than to find that someone has gone over his head or that one of his supervisors has taken orders from someone down the line without his knowledge. It is often a quick way to get a job started, but the followup is poor and one can lose the benefit of intermediate supervision.

Men should be encouraged to ask for help when they are in trouble. Too often they consider it is a reflection on their ability if they cannot handle all problems. You may have a little trouble with a few asking for a check before they have taken any action themselves, but you can usually pass the decision back to them and in that way build their confidence in themselves.

Electrical men as a rule do not take kindly to paper work but a certain amount is necessary and should be kept to a minimum whether it is in a large or small plant. Have supervisors plan, layout, supervise, and follow up all maintenance work whether it be regularly scheduled work, the handling of trouble calls, construction and installation of equipment, or plant rearrangements. Have someone else keep maintenance records, installation reports, etc.

Use this supervisor's knowledge and ability to maintain electrical equipment properly so that down time is at a minimum and your production schedules are met. Have your supervision trained to do the following types of work:

1. Make frequent tours throughout your plant making note of unsafe practices—improper maintenance and installations.

2. Have them inform you of operations in general and follow up on important jobs.

3. Safety. Watch and check safe practices of men and equipment.

4. Keep aware of new developments which may be of importance to you and a means of increasing efficiency and savings.

5. Preventive Maintenance. Make up a breakdown list for use by the men doing maintenance work and check these men occasionally in order to encourage the men to do a better job. This should be on all types of equipment. Also see whether the maintenance is too much or too little. Lubrication problems should also be looked into, and get information on all new equipment for safe operation and ease of maintenance.

6. Know the Power Distribution System and setup from the incoming service throughout the plant to the various sub-stations or load distribution points.

7. Spare Parts. This item is a supervisor's nightmare. You may have what you consider a good stock

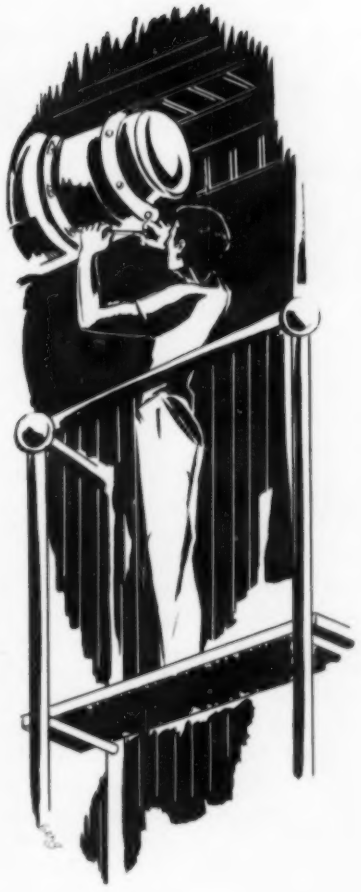
For detailed descriptions of products and equipment for electrical maintenance, see pages 368–399 and 471–472 of: "Best's Safety & Maintenance Directory" 1952–1953 edition.

EQUIPMENT

By JOSEPH PETRUSKA
Superintendent of Maintenance
Wright Aeronautical Co.
Wood Ridge, N. J.

and then you find a machine down due to a special solenoid coil which has burnt out. You have a hundred different types of coils but none like the one you want. So you tie up production until you get another coil or rewind the old one. The supervisor must keep close contact on his stock and pick out items to stock which must be kept at a minimum to operate well financially.

8. Your supervisor must be a general all-round mechanic, quick to diagnose troubles and trace them down to the causes which may be mechanical or electrical and to pass this information on to the other workers.



Keep Maintenance Informed

Electrical maintenance men have plenty to do and excessive paper work only adds to the burden. We had a machine trouble call on a certain machine. An electrician was dispatched to this location and was on the job for about an hour when the production supervisor came over to him and asked what the trouble was. The electrician answered, "I'm still checking." The supervisor then called the electric supervisor to the machine and wanted to know why the machine hadn't been repaired in the two hours since it went down. The electrical supervisor said, "Mister, it took an electrical designer probably a year to work out this circuit and you expect us to repair it in 15 minutes." The supervisor walked away slowly.

The point is that some of these electrical circuits are really complicated, what with electronic units being tied into standard 440 Volt AC lines for speed variation and fine controls. These machines are usually connected up by outside construction crews or your own construction crew without any thought for the maintenance man. When new equipment and machines are started up, either with or without the machine service man, call in your maintenance man who can ask several questions pertaining to its operation. He is better equipped than a construction man. He should know which are the most important key machines and equipment in your production lines, what importance to place on carrying spare parts and motors, and what action to take in case of breakdowns.

Safety Problems

A good maintenance department has a good safety record. Whether your plant is large or small, safety should begin with the hiring of a new worker and continue on indefinitely. A special set of safety rules for the electrical department should be written up and all employees be given copies. These

should be reviewed periodically for any changes or additions. Five or ten minute safety talks by your supervision do wonders and improve morale. Use of safety equipment can also be discussed at this time. We at Wright Aero are fortunate in having a fine safety department consisting of supervisors, inspectors, and a safety crib which furnishes safety items for general use and enables the employees to purchase safety shoes at cost price. These men are on the job 24 hours a day and are always available to help in any way requested.

Maintenance & Operation

For the small plant a central dispatching area or shop will handle all maintenance calls very satisfactorily, but when the plant covers acres of ground, the time lost in reaching the job is too great. Then you must have a series of outposts or sub-maintenance centers to operate efficiently.

From this area you can have your preventive maintenance crew and your trouble shooters work out. At Wright Aero, all trouble calls are received at a central point by a Trouble Clerk who then sorts the calls into areas and transmits the orders over the telautograph system to the outposts. Supervision receives them and assigns the jobs on urgent request tickets which must be returned marked completed or not completed. Uncompleted are then turned over to the succeeding shift by supervision. Preventive maintenance is handled in the following manner:

Machine Tools: Men assigned receive instructions on a breakdown sheet listing what is to be checked and how it is to be checked. After the job is complete he turns in this sheet to his supervisor. In general, machine tools are checked about once a month. Checking includes motors, limit switches, controls, etc. Machines processing magnesium parts are given special attention.

Ovens and furnaces have the controls and contactors checked weekly in most cases depending on their operation time.

All overhead cranes and hoists are checked over by the millwrights and electricians twice a year and by the electricians approximately every 2 months.

High voltage switchgear and relays operating daily, large rotating equipment such as axial flow fans, air compressors, dynamometers, etc., of the 2300 volt or 4150 volt type are checked twice a year. The oil is tested at least once a year in our oil circuit breakers.

All large high voltage synchronous motors are cleaned, washed down, and painted with glyptal at least twice a year and a record is kept of these actions. Blowing down and wiping down these units is done at least once a month.

Power Distribution: Wright Aeronautical is a large consumer of electricity, having motors from fractional up to 5000 H.P. operating on voltages from 110 to 4150, and requires a large power distribution setup consisting of underground cable runs and pole line distribution of power to sub-stations at 13,200 volts and 26,400 volts. At these sub-stations the power is stepped down to lesser voltages. All equipment used in this power setup is recorded and kept up-to-date in our master sub control room. Men maintaining this equipment are specially trained by us and work as a separate group. These men take care of all outdoor and indoor bus and switchgear, pole line power, and lighting distribution lines; overhaul oil circuit breakers, and network protectors. Included in this group are a power dispatcher on each shift whose duties consist of making load surveys, taking load readings, looking after power conservation, putting on and off transformers whenever load conditions warrant, and keeping a daily log on all power activity. These men in a plant such as ours can save upwards of $15,000 yearly in their daily work. Our electrical engineer is responsible for setting up procedures and operating instructions for this group and keeps close tabs on all work performed.

Motor Repair: During the war we had our own motor repair shop which was cut back drastically after the war. Studies made of this group by our plant engineer and electrical engineer proved that this was costly and that we would be better off financially if we contracted our work out to a large motor repair shop. This was done and we are saving considerable money. We did not do away with the motor repair altogether but kept two men employed to rewind or repair solenoid coils or small tools or make minor repairs on motors. These men are also used to check large motors whenever they are down for maintenance.

Meters: Instruments used in maintaining electrical equipment are recording ammeters, wattmeters, clampon or tongmeters, ammeters and voltmeters (A.C. or D.C.), analyzers, tachometers, strobotars, ohmmeters, and meggers. These are kept in area lockers, loaned to the men and are brought back at the end of each shift.

Electric Truck and Battery Operation: We have two men on each shift changing, watering, and charging batteries. Another crew of two men on one shift clean and steam batteries. We have a large and diversified amount of electric trucks which require the services of one man daily. Occasionally we put in two extra men to help out. All trucks are on schedule for greasing and general checkup of controls and mechanical features are looked at every month. Doing this saved unnecessary breakdowns and loss of time in material handling.

Overhead and Bench Lighting: We have approximately 18,000 overhead lighting fixtures which are cleaned periodically, 4000 bench lights, 1200 cold cathode fixtures, 4000 incandescent fixtures. Two teams of two men in each team work on cleaning these fixtures, washing the reflectors in tubs on the floor and working from lifts or crows' nest. Lamps are replaced during the 12th or 13th month with the exception of the cold cathode which is replaced approximately every 2½–3 years.

From an address presented at the Third Plant Maintenance Show.

No. 4 of a series of 6

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FIND

By P. C. HENSLER
Fire Protection Institute
New York City

Fig. 1. The fixed temperature principle is used to sound alarm and actuate sprinklers.

Fire detection and alarm equipment is a vital factor in keeping fire losses down, for prompt discovery means easier extinguishment and less damage.

ADVANCES in fire protection engineering have made the average employee in plants throughout the nation safer at his job than in his home. Fire safe construction, approved fire control equipment, automatic sprinkler protection and fire alarm systems have all been designed to keep the industrial losses and death rate low despite dangers introduced by modern processes.

Signaling systems used for fire protection purposes are highly specialized and include many forms of equipment. There are five methods of operating and maintaining such signaling systems:

1. Central station systems, where the operations of the system are signaled to, recorded, maintained by and supervised from an approved central station. These stations depend upon competent, experienced observers whose duty it is to take action upon receipt of a fire signal. The distinguishing feature of such a system is that it is not under the management of the owner or operator of the protected premises. The ownership, control and operation is in the hands of a person, firm or corporation whose main business is furnishing and supervising the system.

2. Proprietary systems, where the operations are recorded in and supervised by a central station located on the protected property and maintained by the occupant.

3. Local systems, where the operations cause the sounding of an alarm in one or more places on the premises, primarily for notification of the occupants.

For detailed descriptions of fire alarm systems and equipment, see pages 8–23 of the 1952–53 edition of "Best's Safety & Maintenance Directory"

FEATURE

This is the third of four feature articles on Fire Protection. The next story of the series will appear in the December issue of SAFETY MAINTENANCE & PRODUCTION.

FIRES PROMPTLY

4. Auxiliary systems, where the operations are transmitted over a municipal alarm system to a fire station or fire alarm headquarters.

5. Direct fire department connection, where the operations are transmitted to, and recorded in, municipal fire headquarters over direct line connections.

Manual alarm sending stations should be located at convenient points so that one or more boxes may be quickly reached in case of fire. Where a number of alarm boxes are connected on the same circuit, the location of the origin of the signal is indicated by a series of electric impulses to produce intermittent electric contact at predetermined intervals, different for each box.

Alarms Cut Losses

In contrast with the sometimes appalling loss of life in industrial blazes years ago, only a negligible per cent of today's annual fire fatalities can be traced to plants equipped with automatic fire alarm systems.

These systems are an extremely important feature of fire protection since a large portion of fire loss can be pinned down to delay in the discovery of fires. Where blazes are caught in their incipiency and proper action is taken to extinguish them promptly, losses are generally small.

Automatic fire alarm systems employ thermostatic devices arranged to give the fire alarm through a series

Fig. 2. The control room of a central station service system.

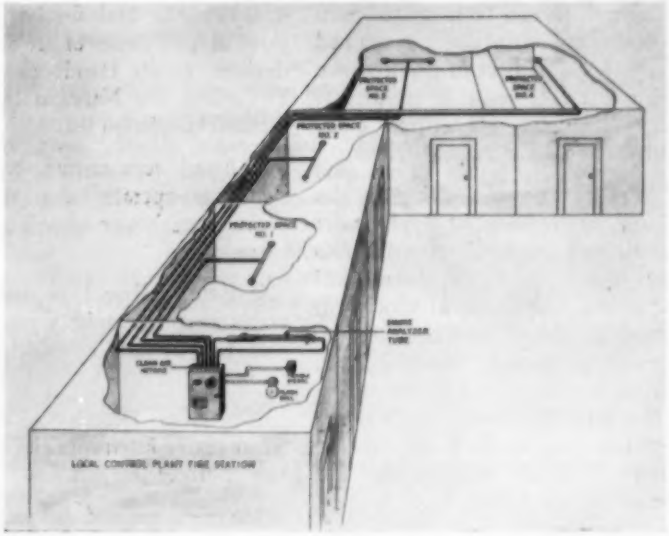

Fig. 3. Typical installation of smoke detector alarm system, protecting four separate areas, shows piping, control cabinet, analyzer tube, and alarms.

Fig. 4. Smoke detector tube in baggage compartment of airplane signals a fire alarm to pilot when photoelectric cell picks up traces of smoke. Pilot can turn on carbon dioxide extinguishing system.

of bells, gongs or other signals. They are used primarily in buildings without sprinkler protection, but many installations are seen in sprinklered buildings with valuable contents that are particularly subject to water damage. The operation of an automatic alarm often makes it possible to put a fire out with approved hand extinguishers before there is sufficient heat to open sprinklers.

To assure continuity of service with as few maintenance problems as possible, fire detecting systems should be installed with the finest workmanship and materials. The detecting element must be located where it will be most sensitive to fire and still be reasonably free from false alarm possibilities. The system, of course, should be inspected periodically and maintained by trained employees. Neglect in maintenance permits a false sense of security as the system may not operate efficiently when an emergency arises.

The devices and wiring in the alarm circuit can be kept under continuous electrical supervision so that any break in the circuit will produce a trouble signal which will sound locally or be transmitted to the central station. Should a break occur, the alarm circuit should be automatically restored to operating condition to enable the system to function if fire should break out before the trouble has been repaired. When a silencing switch for trouble signals is provided, it can be supervised by a pilot light.

Electric current to operate these systems must be supplied without a break from a dependable source, properly supervised and maintained. The current is usually supplied from primary batteries or storage batteries regularly charged by a rectifier connected to a steady source of power. Where the only available power supply is direct current, a group of resistors can be used to reduce current to the correct charging rate for storage batteries. Low voltage transformers or batteries can be used to operate trouble bells.

An annunciator, which indicates visually the section or floor from which the alarm signal originated, is usually included in the system. Vibrating gongs, whistles or sirens are an essential part of all local systems, but where a central station or direct fire department connection is involved, they are optional.

Each system, except local ones protecting small areas, should have a manual alarm box either as an auxiliary means for working the system or a separate means of transmitting an alarm.

Thermostatic and Other Fire Sensitive Devices

Devices have also been designed to operate by the heat of fire, by dangerous increases in temperature, or by smoke and fire. There are three distinct classes of fire detecting devices. In its Handbook of Fire Protection, the National Fire Protection Association lists:

1. *Fixed temperature type*, designed to operate when the temperature reaches or exceeds a certain value.

2. *Rate of Rise Type*, which operates when the rapidity of temperature rise exceeds a predetermined rate.

3. *Smoke Detectors*, actuated when smoke interrupts a light beam to a photoelectric cell.

These devices can be subdivided into:

a. Those in which thermally sensitive elements are "spotted" at specified distances on the ceiling or roof.

b. Continuous line types, in which the thermally sensitive element is continuous along a line.

c. Those which are capable of repeated operation without replacement.

d. Those which must be replaced when they have operated.

(There are also combination or rate compensation types that combine the principles of fixed temperature and rate-of-rise.)

All thermostats should be installed where they will operate properly in case of fire. As in the case of approved fire control equipment, those tested by Underwriters' Laboratories or Factory Mutual Laboratories are considered the most reliable.

Thermostats of the fixed temperature type usually have temperature ratings corresponding with those of of automatic sprinklers. Rate-of-rise thermostats operate at a rate of temperature rise likely to result from fire, but unlikely to occur from any other cause. Smoke detectors operate when smoke appears in a duct or space. In most of these detectors, a photoelectric cell is energized by a light beam and when smoke interrupts the light beam, the device is actuated.

Almost all of the fire detecting devices may be arranged electrically or mechanically to start a chain of operations such as the ringing of a bell or electrically tripping a weight. Common uses of releases are to shut fire doors, turn on water in sprinkler

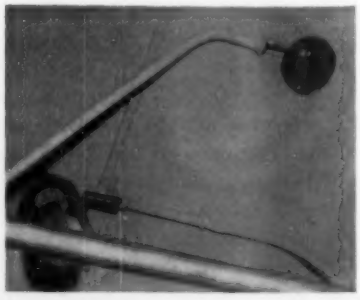

Fig. 5. Fire thermostat mounted on ceiling actuates alarm and extinguishing systems.

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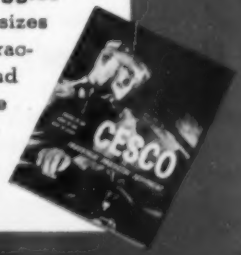

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systems, operate carbon dioxide or foam systems, shut off ventilating motors, open automatic drains or operate covers on dip tanks.

Split-second control of fire has come a long way in recent years. When more and better signalling and detection systems are adopted by an increased number of plants throughout the country, there is little doubt the nation's industrial fire loss can be decreased substantially below the $730,084,000 suffered in 1951.

Picture Credits: Fig. 1—Grinnell Co., Inc.; Fig. 2—American District Telegraph Co.; Figs. 3, 4 & 5—Walter Kidde & Co.

Fire Losses

ESTIMATED fire losses in the United States during August amounted to $56,462,000, it was reported by the National Board of Fire Underwriters.

According to Lewis A. Vincent, NBFU's general manager, this $56,462,000 loss represents an increase of 1.9 per cent over losses of $55,416,000 reported August 1951, and a decrease of 8.5 per cent from losses of $61,675,000 for last July (1952).

Losses for the first eight months of 1952 now total $522,790,000, an increase of 5.6 per cent over the first eight months of 1951, when they amounted to $495,077,000.

These estimated losses under fire insurance policies include an allowance for uninsured and unreported losses.

Safe Elevator Loads

Ninety-one elevator accidents in which persons were injured occurred last year in buildings and liftways in New York City, compared with 98 in the year 1950.

Frank Hochstrasser, chief inspector of elevator accidents for the city's Department of Housing and Buildings, told a meeting that the building elevators were the safest means of mass transportation in the city.

In Manhattan alone, he said, the 3,000,000,000 (billion) passengers carried in the borough's 32,000 elevators exceeded the passengers traffic of the combined public carriers in the entire Metropolitan area. He said the elevator accident rate was lower than that of any other means of transportation.

He said that many of the accidents that occurred had come about because of "certain tolerated irregularities" in the operation of lifts. Declaring that elevator accidents could be reduced further if "certain repetitious practices, stemming from expediency" were eliminated, Mr. Hochstrasser warned that the operators of buildings could not divest themselves of legal responsibility by having a temporary user sign a release drawn up in legal form.

The release form is used sometimes when a tenant or installer of a safe or heavy machinery loads the elevator with a one-piece load in excess of its capacity, the city official said.

"They rely upon the law of averages that favors the prevention of accidents to keep them out of trouble," Mr. Hochstrasser said. "The danger in this case is that the equipment is subjected to stresses for which it is not intended. A condition may develop which at some future time might be the cause of another accident.

"It is a matter of law that the owner or person in control of a premises in which an elevator is located cannot divest himself of the statutory requirements for the safe and proper maintenance and operation of the elevator. The carrying of one-piece loads exceeding the capacity, unless the elevator is designed as a safe lift, is a violation of law. The attempt by the management to divest itself of control indicates knowledge of the danger involved. This in some cases may spell out criminal negligence.

"Not all tolerated irregularities are so clearly evident, nor do they constitute violations of law; but they do have one thing in common. They set up a chain of circumstances that will ultimately result in an accident."

In an effort to prevent injuries and deaths, Mr. Hochstrasser pointed out, the city code requires that in the case of every accident—even if no injury to a person results—the owner or person in control must notify the Department of Housing and Building, and the borough superintendent make a full report on the circumstances and causes of the accident. He said this was for the purpose of remedying conditions so that a repetition or worse accident could not occur.

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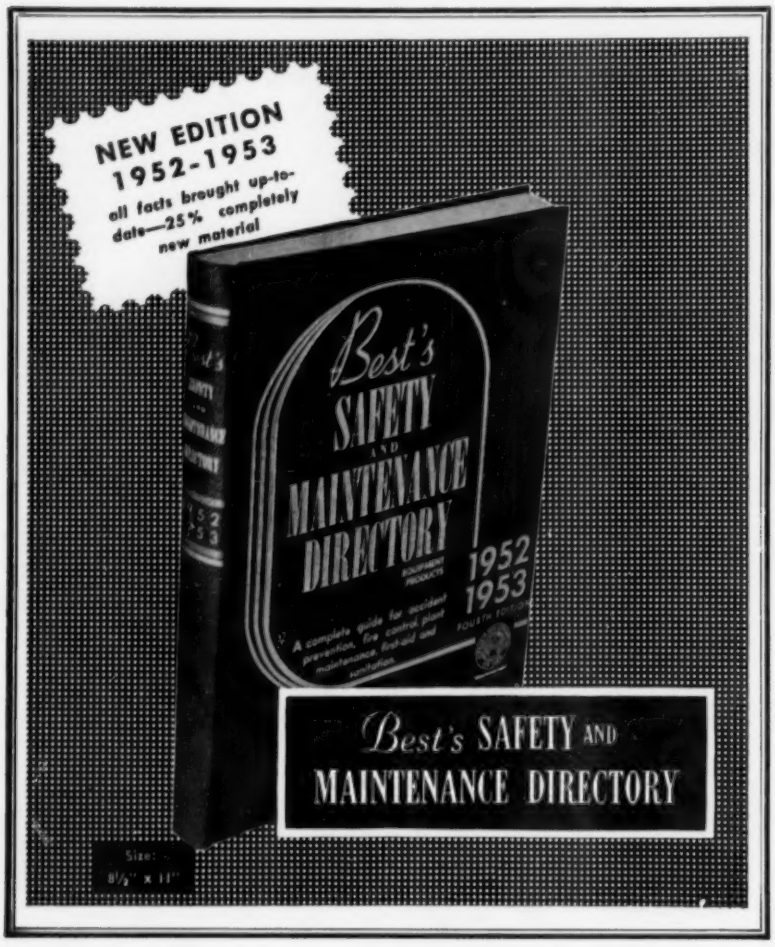

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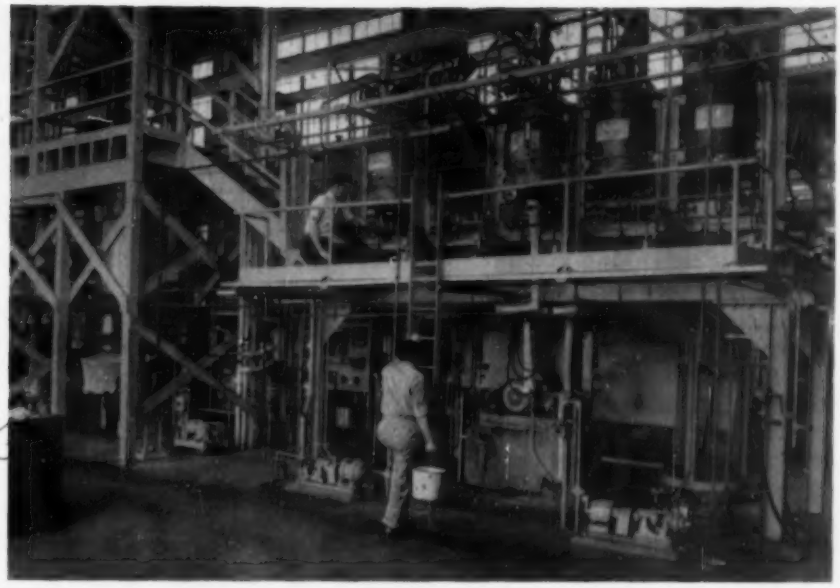

The Safety Engineer Rolls Up His Sleeves

What exactly are the responsibilities of the safety engineer? Here are some pointers on how to apply the principles of safety engineering—especially in the chemical industry.

By STANLEY F. SPENCE
Director, Safety & Fire Prevention
American Cyanamid Company
New York

PART 2

(Continued from the October issue of "Safety Maintenance & Production")

BECAUSE the safety engineer is responsible for seeing that a plant is safely maintained and operated, much of his work will be concerned with systems operating within the plant organization structure. The work order procedure is one of these. It is essential that the safety engineer know what is contemplated, in order that he can ensure the safety of the proposed job in progress—also the safeness of the final installation which is contemplated. I am referring now generally to the smaller maintenance jobs and alteration work which require the issuance of a work order. Many work orders, also of course, result from safety recommendations on the part of plant personnel, and it is always important that valid safety recommendations and safety suggestions be scheduled for completion at a time commensurate with their importance. One system which has worked out satisfactorily from the safety engineer's standpoint is this:

1. The work order usually originates with the supervisor of the department in which the work is to be done.

2. A copy of the work order goes to the safety engineer and it is reviewed by him.

3. If the safety engineer is interested in the work from the standpoint of safety or fire, he establishes with the operating department and the mechanical department, a schedule date for completion.

4. The safety engineer will want to make sure that the work order procedure ties in with the plant safety work (or "hot" work) permit.

5. The safety engineer will follow through with the safety of the job as it progresses, and will review it for final acceptance from the safety standpoint.

Safety Work Permits

The establishment of safety work permits and "hot" work permits is another important system in every chemical plant and one which must be very carefully devised and carefully followed through. Systems differ in some details in order to satisfy specifically the differences in plant organization and other local characteristics but by and large they are developed along the following set of principles:

1. The permit should be used in every case where the work (by company employees or outside contractors) may subject company personnel, equipment or property to unusual hazard, such as all "hot" work, entering of confined spaces, high work, possible exposure to abnormal temperature, corrosive, or toxic materials, etc. The permits for contractors are, for the most part, "hot" work permits.

2. The responsibility for making the work place safe, for instructing the workmen in the hazards peculiar to the environment, and for filling out the permit form, rests with the supervisor in charge of the work place. As an example, if a tank is to be entered by a mechanic, the supervisor of the department to which the tank is assigned, has this responsibility.

3. The work permit form should be completed with specific detail in regard to the following items, as a minimum:

(a) Date and time of work, and of issue of the permit.

(b) Names and badge numbers of workmen covered.

(c) Exact location of work: building, floor, department, area and/or column number.

(d) Explicit description of work to be done.

(e) Time of expiration of permit.

(f) Check list requiring definite "yes" or "no" answers, covering items specific to the plant.

(g) Gas tester's report if required, and signature.

(h) Signature of supervisor who is responsible for the area and for completion of the permit form.

(i) Other authorized signature or signatures as required by plant policy. These may be the mechanical department supervisor of the mechanical crew assigned to do the work, the superintendent of the division in which the work is to be done, the plant safety supervisor, or others as required by the hazards inherent in the plant, the particular kind of plant organization, and other local characteristics. Two authorized signers are usually adequate.

4. The gas tester ordinarily is a member of the plant safety department. Where such is not the case, he may be a laboratory employee, reporting to the safety department on his gas testing work.

5. Gas tests should be made shortly or immed[illegible]tely before employees enter the a[illegible] area. Interim tests should be made as necessary.

6. Work permits should be valid for the stipulated day, usually 8 a.m. to 8 a.m. Before reissuing a permit, the authorized signers must again check all conditions by personal inspection, as they did in the preparation of the original permit.

7. No authorized signer must sign the safety work permit until he assures himself, by personal inspection of the work place, that the job can be done safely.

8. Extra standby assistance, such as firemen, should be assigned to the job as determined by the authorized signers. The fire watch assignment is made through the plant fire chief.

9. Blanking off of lines, purging of the vessels, locking and tagging procedures for valves and switches must be rigidly adhered to.

10. At completion of the work, the job should be inspected for acceptance by the operating supervisor who originated the safety work permit. Notification of completion should be made promptly to the other authorized signer or signers.

Safety Standards

One system which will greatly aid the safety engineer and therefore the entire plant safety program, is the establishment of safety standards for methods and equipment. These standards are ordinarily the product of the safety engineer's effort, but only with the full assistance of all plant divisions or departments concerned. Such cooperative effort and all-around acceptance of standards are necessary before publication, if one is to expect full satisfactory recognition of them by all plant people concerned. Of course, they always are issued as part of standard plant policy, which means that they have the backing of the plant manager. In the case of a multiplant organization, this would presuppose the backing of all head office management and the president of the corporation. The safety standards for methods and equipment should be developed on the basis of those items which actually have proved to be predominating accident problems, or which, through their potentialities, could be serious accident problems. In all instances, they would be those subjects which have broadest application to all plant operations.

A few of the subjects which might well be covered by Safety Standards for methods and equipment in the average chemical plant are:

"Stairways, platforms, and walkways"
"Portable ladders"
"Hose and fittings for use with air, water and steam"
"Tank car loading and unloading"
"Entering tanks and other en-

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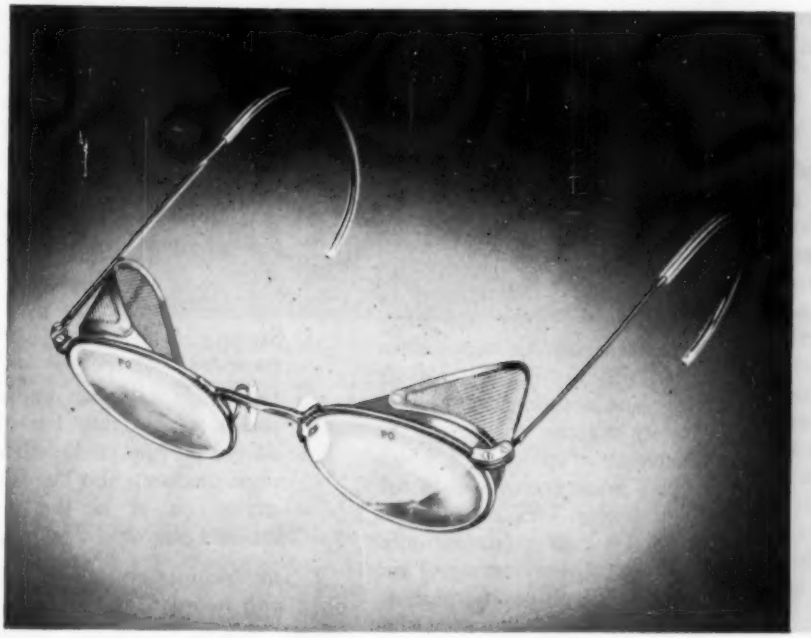

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Safety Inspections

The plant safety engineer will be much concerned with the development and control of plant and equipment safety inspections. Some of this work will key in very closely with the plant prevention maintenance routine. In connection with the preventive maintenance program, the safety engineer should cooperate with the maintenance department to be sure that all preventive maintenance schedules for inspection and replacement are satisfactory from the safety standpoint. As to those inspections which have to do specifically with safety, the engineer could give consideration to these fundamentals:

1. Make sure that the proper items are covered—hoisting equipment, safety showers, ladders, pressure relief devices, etc.

2. Proper inspection check lists are developed and used.

3. Proper procedure is established for obtaining corrective action where such is indicated.

4. There must be notification to the parties concerned in the inspection reports, usually the operating department concerned, the mechanical department, and the safety department.

5. Competence of the inspectors in their respective fields.

6. The safety engineer always should be on top of the safety inspection schedule by making selected inspections himself, or by his subordinates, by receiving copies of reports, or by other methods best suited to the organization. He should of course keep a check list to make sure that the inspection procedures are followed as scheduled.

In his development of systems for the plant, the safety engineer will want to make sure that emergency shut-down and/or hold-safe procedures are established for all processes.

The preparation of the procedures themselves, of course, is properly a responsibility of the particular plant supervision; however, it is the duty of the safety engineer to see that the job is done, and that this critical part of plant operation is adequately covered from the safety and fire standpoints.

Standards for Contractors

In this period of industrial plant expansion, one of the problems of the average plant safety engineer is the relationship, from the safety standpoint, which his organization has with outside contractors working on the plant premises. It is well for the safety engineer to oversee the development of procedures which the plant management should follow, in dealing with outside contractors. To gain maximum safeguarding of company personnel and property, it is well for the plant to prepare a fixed procedure somewhat along the following lines:

1. As soon as a job becomes active and is to be sent out for bids, there might be a meeting of the plant department heads concerned, the safety engineer, and the project engineer to discuss and come to a decision on the following points of policy which are to be included in the requirements to be observed by the contractor:

(a) Defining of the boundaries of the job area and, if practicable, the erection of suitable barricades to bound the area physically.
(b) Locations and types of structures for field offices, equipment and storage buildings, etc.
(c) Location and other necessary details covering outside storage areas for materials and equipment.
(d) Waste disposal—utilization of plant waste disposal facilities and specific designation of other waste disposal methods.
(e) Control of contractor's vehicles, equipment, and personnel on the plant.
(f) Parking areas for contractor's employees.
(g) Exact extent to which plant medical facilities will be used, and method of remuneration, if any.
(h) Determination as to whether the job site will be classified as a "fire safe" location. If not, plant procedures covering use of the safety work permit, (and/or "hot" work permit) and smoking will apply.
(i) Fire protection for the job.
(j) Sanitary facilities for contractor's personnel.
(k) Detailed information to the contractor covering hazards on the job site presented by plant processes; also by plant storage on or in the immediate area of the job site.

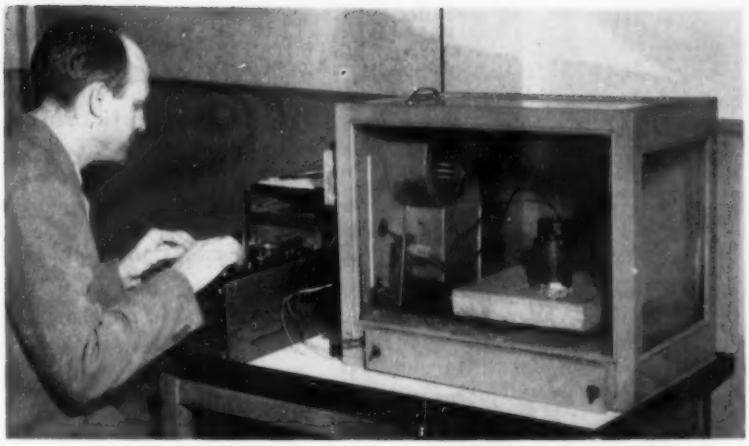
2. The decisions reached by the plant with regard to the aforementioned, reduced to writing, should be made available to the resident engineer or project engineer, so that they can be discussed along with other relevant engineering information at the time the prospective contractors visit the plant.

3. After the contractor has been selected, there should be final agreement made on the safety and fire protection points enumerated before. These items of agreement are reduced to writing, and are binding upon the contractor until the job completion and acceptance.

Safe Operation

The core of all accident prevention is safe operation. The Safety Engineer does everything possible in his power, along with his engineer colleagues, to produce and maintain a physically safe facility. If, however, supervision and operating employees do not have a full understanding of the underlying principles of safe operation, there will be accidents. This is the reason for the safety engineer's interest in the development of operating instructions incorporating all of the why's and

(Continued on page 53)



The conductivity of a sample of terrazzo flooring is determined at the National Bureau of Standards under conditions of controlled humidity and temperature. The sample is inserted into the humidity chamber (right), and the measuring circuit to a precision megohm bridge (left) is completed through a pair of metal electrodes placed on the surface of the sample.

FEATURE

This is the first of four feature articles concerned with Flooring Materials. The other articles of the series will be published in the December through February issues of SAFETY MAINTENANCE & PRODUCTION.

DISCHARGE YOUR STATIC ELECTRICITY

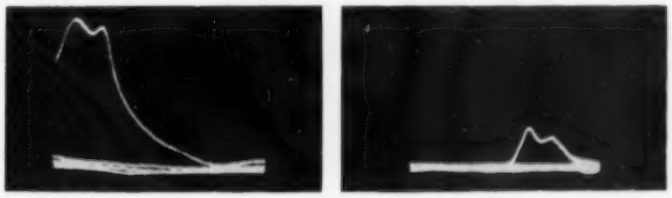
Tests reveal the amount of conductivity needed by materials to dissipate static electricity charges—charges that are a real hazard in industries and occupations involving explosive dusts and vapors.

ELECTROSTATICS, the study of the phenomena of electrically charged particles or bodies, is of fundamental importance to science because many of the basic particles are charged and coulomb forces determine many of the properties of matter. Electrostatic forces are also of increasing industrial importance and have been applied to such processes as ore-separation and large-scale spray-painting. Painters, for instance, have found that a tremendous saving is achieved if the object to be painted is charged to several thousand volts.

In other industries, such as air conditioning, the manufacture of explosives, grain and flour storage, textiles, and printing, static electricity, under many circumstances, can be a distinct hazard. In a granary, for instance, the air is usually thick with fine flammable grain-dust particles. Grain sliding down a metal chute can result in an accumulation of static charge that, when it discharges in an electric spark, can easily ignite the fine dust particles and result in a dangerous and expensive fire.

For many years, the National

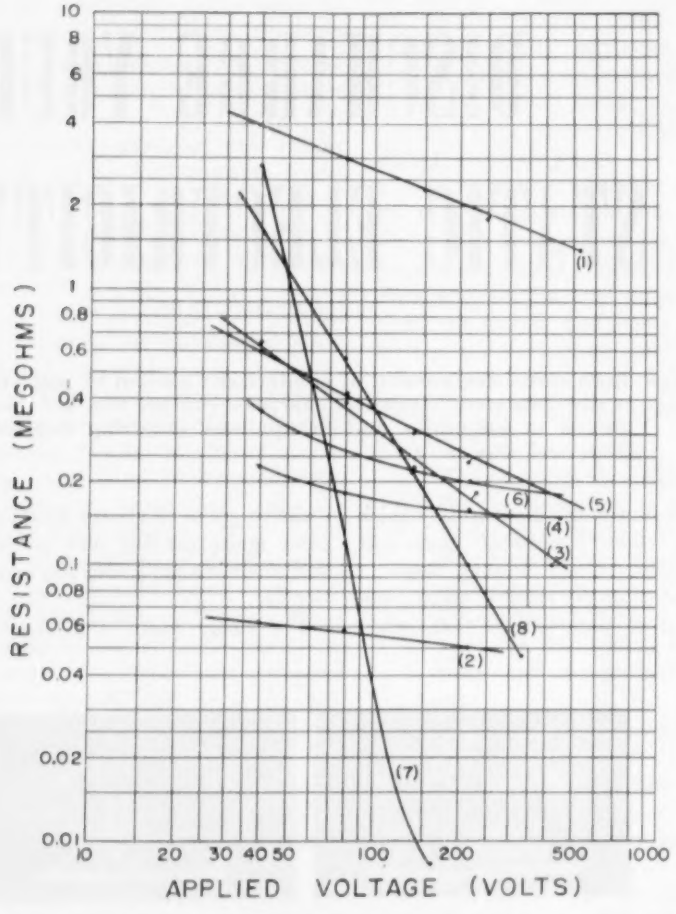
For detailed descriptions of static eliminating equipment & conductive floors, see pages 80, 222–242, and 346–358 of: "Best's Safety & Maintenance Directory" 1952–53 edition.



The magnitude of static electricity developed by a person rising from a metal chair having a plastic-covered seat has been recorded by an oscilloscope. At left is an oscillogram of the voltage developed when the resistance is high (1000 megohms). The potential rise is about 3000 volts and an interval of 0.5 second is required for the person to lose the charge. The right side shows the static potential when a moderate conductor is used. The voltage rise is only 300 volts, and the time to reach the maximum voltage is about 0.05 second.

Bureau of Standards has been consulted by other government agencies on problems arising from the hazards associated with static electricity. To meet a growing demand for this information, the Bureau is presently enlarging its research and standardization program, under the direction of F. L. Hermach, for establishing and evaluating methods of measurement and for determining the properties of materials and equipment used to reduce the hazard. The results of one important phase of the program, an investigation of the conductivity of floor coverings, are being utilized to reduce static electricity hazards in hospitals currently under construction and in Federal munition plants.

Specifications for conductive floors and other equipment depend on a determination of the safe limiting resistances between objects. NBS has participated in determining these limits, evaluating various safety factors, and devising suitable methods applicable to field as well as to laboratory testing of flooring and other materials, and is testing and evaluating various types of conductive floorings, coatings, and waxes. This work is conducted only for Federal and other government agencies.



Graph of resistance of floor coverings (in megohms) vs. applied voltage. The plot shows the dependence of electrical resistance upon applied voltage for samples of conductive flooring at room temperatures and 50 percent ambient relative humidity. The samples are: terrazzo (1), conductive terrazzo (2 & 3), magnesium-oxychloride (4 & 5), conductive rubber (6), conductive linoleum (7), and conductive plastic (8).

Conductive Floors

A conductive floor need be only a moderately good conductor of static electricity—a resistance of one million ohms (one megohm) or less is adequate for this purpose. Such a flooring provides a safe path over which separated electrostatic charges may be reunited as quickly as they were separated. It is this natural inclination of the charges to reunite rapidly that causes the hazard, creates the spark, or provokes the shock.

To determine the resistance characteristics of flooring, a sample is subjected to different voltages under varying conditions of humidity and temperature. The measuring procedure is also considered in the evaluation. The flooring resistance is measured with a special resistance-bridge as a function of pertinent variables such as voltage, humidity, and the type of electrode used in making the measurement. One test on a section of terrazzo flooring showed that for a variation of from 30 to 500 volts, the resistance of the sample decreased from about 4.5 to 1.5 megohms. A low resistance flooring — conductive linoleum — changed from almost 3 megohms at 40 volts to less than 10,000 ohms at only 150 volts.

An accompanying phase of these experiments is a determination of the actual safe upper limit of resistance. For example, tests show that voltages as high as 5000 volts can be developed by such common-every-day-occurrences as getting up from a plastic-covered chair. Oscillographic records, however, indicate that if the resistance between the person and the chair is less than 20 megohms, the voltages will not exceed 300 volts. This is less than the minimum sparking voltage in air and is thus not hazardous.

The magnitude of the electrostatic charges produced by separating objects depends on the material involved, their intimacy of contact, and their surface resistivities. However, many accidents do not arise from these direct effects but rather

(Continued on page 36)

Optical Plastics Come of Age

The plastic safety goggle has come of age, but it is still growing. Improved types are now appearing on the market and further advances can be expected in the future.

IT WASN'T too long ago that all-plastic safety goggles and safety spectacles with plastic lenses were rarely found in industrial plants to protect the eyes of workers from the various hazards in manufacturing operations and processes. There was a very good reason for this scarcity. It was simply because only a few years ago optical safety plastics were practically unknown and had not been developed to the point where desirable optical qualities and strength of material were satisfactory.

Today, the picture has entirely changed, and it would be hard to find a single plant of any size in the country with an eye protection program which is not using plastic safety goggles and spectacles on some, or even all, of its operations involving eye hazards.

Several things are primarily responsible for this rather quick trend to plastic safety goggles and their wide acceptance by safety engineers in such a short period. The big reason is lightness. Because optical safety plastics are extremely light in weight, they can be made into safety goggles and spectacles which can be worn for long periods of time with no discomfort to the head, ears and nose of the wearer. Another reason for the tremendous popularity of modern plastic eye protectors is that, although feather-light in weight, they are amazingly tough and dur-

For detailed descriptions of eye-protective products, see pages 87–122 of "Best's Safety and Maintenance Directory" 1952–53 edition.

able, and have greater strength and ability to resist impact and piercing than was even dreamed of a few years ago.

Government Specifications

In the early research and development work done on optical safety plastics some difficulty was experienced in obtaining permissible optical qualities; but these problems have been overcome. The present-day, plastic safety lens is optically correct and meets strict Government specifications for optical qualities.

Very little publicity has been given to new Government specifications covering all-plastic safety goggles and spectacles and many safety engineers and people interested in accident prevention work are not familiar with them. The following Government specifications for all-plastic safety goggles are available: Military Spec. MIL-G-4128 (USAF) dated 2 June 1950, Goggles, Safety, Plastic; Military Spec. MIL-G-10284 (ORD) dated 1 May 1950, Goggles and Spectacles, All Plastic, Protective; Interim Federal Specification GG-G-531 (GSA-FSS) dated March 10, 1952, Goggles and Spectacles, All Plastic, Industrial. Copies may be obtained by writing the Superintendent of Documents, Washington 25, D. C., and requesting them by the titles and numbers shown. The American Standards Association has been working on a new specification for all-plastic goggles and spectacles for the past several years. It is reported that a final draft has been completed which, if finally approved, should be available in the near future.

It is interesting to note that the new Government specifications are still holding to very stringent and strict requirements for optical qualities and one point of unusual interest is the trend toward requiring greater impact resistance and the inclusion of a new piercing test requirement.

Increased Hazards

Many safety engineers feel that stronger eye protection is needed to offer full protection from present day eye hazards which offer a greater danger than they did a few years ago. Practically all modern machine tools today travel at considerably higher speeds, which results in flying objects traveling at faster velocities. A typical example of this speeding-up is found in the velocities of abrasive wheels today. Many of these wheels are turning from 30% to 100% more RPM than a few years ago and the trend is toward even faster RPM's rather than a leveling off. Safety engineers have found that the extra strength and protection which they can get in modern optical safety plastics off-set the increased hazard of objects flying through the air at higher velocities.

Optical safety plastics have other desirable features, such as an unusual ability to resist pitting from hot metal chips and metal splashes. Plastic lenses will last approximately ten times longer than glass on operations such as grinding and spot welding. Hot metal sparks, chips and splashes do not adhere to plastic lens surfaces so readily as they do to glass. This feature has also made plastic eye protection very popular as a cover goggle to be worn over expensive prescription glasses when the wearer is exposed to these pitting hazards.

Plastic Goggles

Today, several different plastics are being utilized in making safety goggles. Cellulose acetate, acrylic and allyl base plastics are those most widely used. Cellulose acetate has probably received the widest acceptance because it permits thinner sections to be used without sacrificing strength and still retains the highly desirable lightness in weight. Acrylic plastics are also used in both spectacle and eyeshield types. More recently, allyl base plastic has been introduced and has evoked considerable interest. This new plastic material can be cast and baked in moulds in identical shapes to a glass lens—interchangeable to fit into standard spectacle frames. There is also considerable promise in allyl base plastics as an improved material from which a corrective lens may be made. Much research and development work has already been done along this line and satisfactory corrective lenses have already been made from this new allyl base plastic. The surface of the lens made from this new material is almost as hard as glass and has very high resistance to abrasion. Extra strength, good light transmission and fine optical qualities are also favorable features.

Early day optical safety plastics were comparatively soft, and lens surfaces were easily scratched and abraded. Steady progress was made in producing a harder and more dense material, and today most modern optical plastics have a considerably harder surface which is highly resistant to scratches and abrasion. Engineers report that, in most cases, to make the material any harder would result in "brittleness" and a consequent loss of strength and ability to resist impact and piercing. Any advantages gained by making the surface more resistant to abrasion would be lost because of the bigger objection that the material would have less strength.

The replacement cost of lenses and complete units of modern plastic safety goggles is extremely low. Improved manufacturing methods and the steadily increased demand for plastic safety goggles indicates a continuation of low costs.

Future Improvements

Special attention should probably be devoted to the allyl base plastics because it is one of the newest additions to the family and offers great promise for a bright future. It probably has the best prospects of all presently available plastics as far as corrective or prescription lenses are concerned. Allyl base plastic lenses are almost as hard as glass and the lens surfaces are more resistant to abrasion and scratches. One manufacturer reports the development of a still newer, advanced lens of the

(Continued on page 38)

An inspector uses a miner's safety lamp to examine repairs made on a DC-6 aircraft engine. In left hand is a dentist-type mirror for inspecting parts not in direct line of sight.

MINER'S LAMPS AID AIRPLANE MAINTENANCE

Figuratively speaking, miner's lamps have crawled out of the ground and taken to the air. Airline maintenance crews have adopted them for reasons of safety and efficiency.

IF A Pennsylvania coal miner on a flying trip had some time to kill in San Francisco, and his bump of curiosity led him to United Air Lines' maintenance base, he would be in for a surprise. Inspectors and mechanics there have borrowed the traditional miner's safety lamp to provide brilliant light when and where they need it—in wheel wells, the "innards" of aircraft engines, wing and fuselage compartments or spaces—where overhead drop lamps or flashlights are frequently awkward to use or give inadequate light.

As an added work-aid, the maintenance personnel have borrowed an idea from the dentists, too. They now use dentists'-type mirrors for examining points of an engine or out-of-the-way fuel connections not in the direct line of sight.

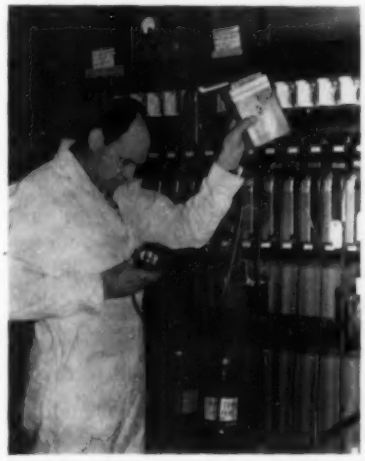
The miner's safety lamp is a direct descendant of Thomas A. Edison's first model of 36 years ago. But the modern lamp provides one hundred times more illuminating intensity than the original model.

United Air Lines men do not wear the lamps on their caps as do miners, however. Instead, reports an airline spokesman, the inspectors and mechanics carry the lamps around their necks, with the batteries in the pockets of their coveralls.

Before they adopted the miner's lamp, technicians at United's San Francisco maintenance base used overhead drop lamps or flashlights. The miner's lamp proved more effective than flashlights, and eliminated the use of high-voltage overhead lights.

Safety experts see advantages in the particular lamp used, above ground or below. The lamp bulb is filled with gas and has two filaments of equal candle power. If one burns out the other remains operative. Should both lamp lens and bulb be broken, the bulb base automatically moves away from contact points, interrupting the circuit so that the filaments cool down and cannot ignite flammable gases that may be present in the atmosphere.

United Air Lines inspectors use miner's lamps to double-check the gas cell compartment in a wing of a large transport. Because the battery lamps were designed for use in gaseous mine atmospheres, they are well-suited for aircraft maintenance where safety is a prime consideration.



Batteries are re-charged every eight hours, and battery solutions kept up, at this efficiently operated lamp and battery-charging rack at United's maintenance base.

The lamp, developed in 1950 after almost five years of research and field testing was designed to improve safety in gaseous mines where open flames had caused many disastrous explosions. In addition, they were designed to withstand rough conditions underground, and so can "take" the service usage at the air line's maintenance base in stride. The four steel-sheathed cells of the nickel-iron-alkaline battery are enclosed in a tough nylon plastic case, molded in one piece, which is resistant to abrasion, corrosion, oil, grease

and moisture encountered in maintenance work. The battery is magnetically locked in the spill-proof case.

Being of nickel-iron-alkali construction, the battery does not destroy itself to function, as do ordinary batteries. It is unaffected by long idle periods, constant recharging, and other types of abuse. Its useful life is measured in years—a distinct contrast to other types of battery construction. Cases have been reported of batteries of this type lying in flooded mines for several years, and after cleaning and recharging, they functioned perfectly.

The lamps are capable of burning continuously for a minimum of 10 hours on one battery charging. At the United maintenance base, they are charged every eight hours.

The lamps have been adopted recently for service aboard the U. S. Maritime Commission's "mothball" fleet, as a preventive measure in reducing electrical hazards caused by trailing cables, energized circuits and the exposed filaments of broken bulbs. However this use by United is the first recorded instance of their employment by an air line, the manufacturer reports.

Pictures by courtesy of Mine Safety Appliances Co.

Atomic Instruments for Oil Exploration

"THE recent introduction of atomic instruments in oil exploration has opened up a new geological era," declared James Mitchel, geophysicist of the Radiac Co., Inc., of New York. "It has cut millions of dollars from the cost of petroleum exploration and has been a boon to our defense effort. The introduction of atomic instruments into the oil industry has resulted in a tremendous drop in extravagant—'wildcatting' — the indiscriminate drilling for oil in territory not known to be productive."

The use of radioactivity detection instruments in oil exploration was an unexpected by-product of aerial surveys for uranium made shortly after World War II by several Canadian "flying physicists." However, it is believed that the Russians used this technique in the early thirties. Russian scientists have been using radioactivity detection instruments for cosmic ray studies for many years.

While prospecting for uranium from low-flying aeroplanes, the Canadians used the latest innovation in airborne atomic instrumentation, the scintillation meter, an ultra-sensitive gamma ray detector, which they had developed. The device is several hundred times more sensitive to gamma rays than the Geiger counter. Gamma rays are emitted from uranium in the earth. The meter measures radioactivity by electronically counting the scintillations of a grid of synthetic crystals struck by atomic radiation. The Canadian geophysicists arrived at a surprising conclusion. Scintillation counting disclosed that almost invariably around the edges of oil fields, there is a "halo" of increased radioactivity. The instrument also revealed that there is less radioactivity directly above the oil fields.

These studies have been of tremendous significance in oil exploration. Indirectly, they have also led to the discovery of valuable minerals, many of which are vital to our defense program.

"The use of radioactivity detection and measurement instruments in oil exploration is somewhat analagous to military strategy," commented Mr. Mitchel. "First, there is the 'Air Force Intelligence,' locating with airborne scintillation counters the general 'halo' areas. Then, in comes the 'Motorized Infantry' carrying mounted Geiger counters on trucks, jeeps, or cars. Finally, come the 'Infantry foot soldiers,' those oil prospectors who pinpoint the 'hot' areas by close low-ground scanning with Geiger counters. Sometimes they lower a Geiger counter into a shallow two-foot hole or into a drill hole several hundred feet deep. The combined operations of prospecting teams in the air and on land, have tamed prodigal wildcatting into an efficient science."

Inside a Safety Engineer

(From page 13) he invented an acid hood that is now in general use and helped develop an ordnance soap, which is used to remove TNT from the hands of workmen.

In December, 1951, after five years as the assistant manager of the Greater Chicago Safety Council, Snyder became safety engineer and plant security officer at Armour Research Foundation of Illinois Institute of Technology in Chicago.

His philosophy of safety is practical: "It's not the type of work so much as personal attitude that spells the difference between a safe and unsafe job. Safety is Doing Things The Correct Way."

As top man in the Foundation's safety program, he looks upon himself as an advisor rather than a policeman, placing trust in personnel to see that his recommendations are carried out.

The record speaks for itself. During the first six months of this year, statistics show only slightly more than five disabling injuries per million manhours of work at the Foundation. The national industrial average is 9.06 disabling injuries—a disabling injury is one that causes an employee to lose a day or more from work as distinguished from the slight cut, burn, or bruise treated from medicine chest supplies.

A second set of records is kept—the severity rate, or the number of days lost per 1,000 man-hours of work. The Foundation rate for the first six months of this year is the .1506th part of a day, while the national industrial average is the .97th part of a day.

Factory Hazards

Vern rates industrial hazards in the following order: first, being struck by an object; second, striking or bumping into an object, and third, strain, which includes slips and overexertion.

Hands are most frequently injured; eyes, second, and the body, third.

In Vern's thinking, safety is not

confined to a particular job. Even the person behind the desk must take care.

Tilting back in chairs has resulted in injured skulls, necks, and backs; the lowly wastebasket is a fire hazard, especially when it contains highly flammable carbon paper; open desks or file drawers can bruise shins or a heavy drawer opened too far can tip over a file cabinet; paper and staples have been known to cause nasty cuts; electrical cords have tripped up busy executives; the electric fan can nip fingers if moved while running, and thumb tacks dropped on the floor may puncture a secretary's thin-soled shoes.

Laboratory Hazards

His recommendations for lab safety include:

Protection against dangerous fumes; cleaning up floor spills immediately; using care when handling glass tubing; not throwing broken glass into rubbish; keeping aisles clean and observing general good housekeeping; wearing safety spectacles to avoid injuries to the eyes; removing rings, watches, neckties, and rolling up long sleeves when working around moving machinery; taking care not to store heavy objects too high or too close to the edge of a shelf; using protective gloves to handle hot and corrosive materials, and calling maintenance to move heavy equipment.

Serious accidents tend to run in groups of three, but Vern attributes this to coincidence rather than superstition.

When a serious accident happens, the supervisor concerned notifies Vern.

"Arranging proper medical attention for the injured man is our first concern," he says. "After that I talk to witnesses and reconstruct the accident to determine what measures are necessary to prevent a similar injury. This investigation often results in safety recommendations from me. In addition, supervisors also file a formal report."

Plant security was added to Vern's duties recently. His definition of the

6 major improvements in Edmont gloves

to fit your job requirements

New flexible NEOX (reinforced neoprene) coating gives firm, easy grip

Never before a chemical and wear-resistant coated glove with such flexibility and grip. Far superior to ordinary neoprene. Most widely applicable of all coated work gloves.

Redmont heavy-duty NEOX gloves have improved safety-grip finish

Finish cured into 30% thicker NEOX coating. Won't chip or peel. Safest glove made. Seamless wearing surface, extra-wide thumb span, curved fingers.

New Grappler plastic gloves far outwear leather, other plastics

Coated with DUROX, 50% longer wearing, *non-slip* plastic, and made in new wing thumb, pre-flexed finger pattern that perfectly fits the hand.

Hand-fitting Monkey Grips with flexible plastic coating

Second only to Grapplers for long wear and made in same pattern. Fits the hand all over; no bagginess; comfortable grip.

New white Sani-Gluv meets special sanitation requirements

Liquid-proof all-white plastic coating in new hand-fitting pattern with wing thumb and pre-flexed fingers.

Improved white-fabric-lined Grab-its, approved by safety directors

Long-wearing, sure-gripping rough finished natural rubber, bonded to new and sturdier white fabric.

Test these gloves at our expense: Send brief description (on business letterhead) of your operations, materials handled and temperature condition. Without cost, we will forward samples of the type gloves we recommend for testing on-the-job. Address

Edmont Manufacturing Company., 1256 Walnut Street, Coshocton, Ohio

World's largest maker of coated industrial gloves

Edmont job-fitted gloves

For details, use Key # S-15 on prepaid card on page 77

job is: "To prevent intentional or accidental injuries to personnel or damage to property and equipment, and to keep confidential matters out of the hands of unauthorized people."

Vern's observation about safety is: "We plan for that new home, education for the youngsters, a new car, or vacation, but rarely think in terms of accidents, the very thing that may upset our other plans."

Trunk Injuries Highest in '51

ALMOST one-quarter of all disabling occupational injuries could be eliminated by preventing accidents which injure the body trunk.

There were approximately 2,100,000 on-the-job injuries last year. Of these, 24 per cent—or 500,000— occurred to the body trunk. In addition, such injuries claimed 26 per cent of all compensation paid.

"Most of these injuries were in the 'preventable' class," said Floyd E. Frazier, director of accident prevention for an insurance organization.

Strains and sprains accounted for almost half of the body trunk injuries according to states which submitted breakdowns of the different accident categories in their reports to the National Safety Council for 1951. Hernia was responsible for not quite one-quarter.

Frazier said a program of worker education aimed at teaching each man not only his capabilities but also his limitations would go a long way toward reducing such accidents.

"A man just can't keep on lifting from 150 to 200 pounds without eventually injuring himself," Frazier said. "Neither can he continually walk over a slick spot on the floor without, at some time, suffering a bad fall. Eliminate sources of falls, and strains and sprains, and the trunk injury problem would be pretty well solved."

Safety In Korea

ORDNANCE Base Depot #1, part of the Korean Base Section's 226th Ordnance Base Depot, recently sponsored a "safety slogan" contest amongst their Korean employees. The 2,000 employees produced 2,100 entries.

Concentrating on fire prevention as well as other precautionary activities assuring the safety of men and material, the contest, first of its type in the Orient, was conducted on the order of customer participation advertising schemes, which are popular in the United States for selling soap chips and cereals.

The project was organized by 1st Lt. William T. Fine, Troy, N. Y., safety officer and fire marshal for the 226th OBD. A professional safety engineer in civilian life, Lieutenant Fine has conducted similar contests in the United States and is planning others of the same nature throughout the 226th OBD.

This is in keeping with the broad, over-all safety program of the 226th. Each Korean employee undergoes a thorough safety indoctrination before beginning work. Initial instructions are supplemented by daily lectures of ten minutes duration before work each day. Army personnel working at the depot sit in on the daily lectures.

Prizes were 10-pound bags of sugar and bundles of yard goods for the winners of the contest and were presented by Lt. Col. Walter D. Rogers, Denver, Colo., commanding officer of the 226th, at the unit's labor office.

These commodities, among the most difficult for Korean civilians to obtain, came from the 226th stores, operated for personnel employed by the depot. Special funds were set up by the stores to provide the prizes.

U. S. Army Photo.

Discharge Your Static

(Continued from page 30)

from the secondary effects resulting when the static electric charges are reunited. For instance, the electric shock experienced when a charged person touches a conducting object, while generally merely annoying, can cause serious damage if the person is precariously balanced on top of a ladder at the time he receives the minor shock. Also, the energies in electrostatic sparks may be large enough to ignite flammable gases or vapors that may be present in an enclosed room. Likewise, the "precepitation static" caused by corona discharges from highly charged aircraft in flight has been found to be often responsible for very serious interruptions to radio communications.

Methods of Control

The most serious hazards, those of possible ignition of flammable gases or dusts, can best be mitigated by reducing the flammability or eliminating exposure to the flammable agent. This also reduces the hazard from other sources of ignition, such as arcs from the normal operation of electric equipment or the presence of hot bodies in the hazardous area. These measures, when coupled with the exclusion from the area of materials such as plastics, wool, and rubber, which have high electrical resistivity and "generate" high electrostatic charges, are often sufficient to reduce the hazard to a negligible value.

More elaborate methods of mitigation depend upon reuniting the charges as fast as they are separated in order to keep the voltage across the affected objects low. This can be accomplished by connecting sta-

tionary metallic objects to a common ground, by humidification (which provides a film of moisture of moderate conductivity on most objects), or by installing a conductive floor to provide electrical contact with the objects that move or rest upon it. The latter is generally considered the safest method where persons or moving objects may separate charges. Thus, in hospital operating rooms, for instance, the personnel normally wear shoes with conductive rubber soles or other conductive devices, and the floors are made of conductive material. The separated charges developed in a person by walking, rising from a chair, or removing sheeting are then quickly reunited through the flooring before they can be transferred to another person or object.

In addition to the consultatory and testing services to other government agencies, members of the NBS staff have also served on a number of committees that have been organized to formulate rules and procedures governing static electricity preventive practices. In 1942, the Bureau published a circular [1] that outlines the problems and suggests solutions that are as timely today as they were ten years ago. The circular discusses the nature and the origin of the charges of static electricity arising in industrial processes, and explains the various methods of mitigating the hazards that they introduce. It also gives the quantitative basis for an engineering treatment of the phenomena.

[1] NBS Circular 438, Static Electricity, available from the Superintendent of Documents, Washington 25, D. C., at 10 cents a copy.

Pictures by courtesy of the National Bureau of Standards.

WHAT'S NEW?

See

Pages 74–76

Pyrene
REG. U.S. PAT. OFF.

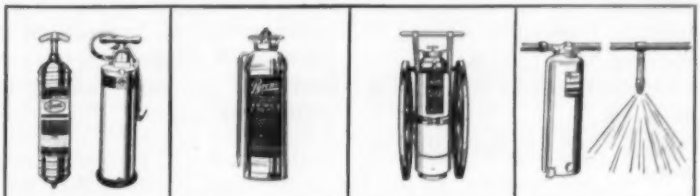
A PYRENE WON'T STOP CARELESSNESS—
IT WILL KILL FIRES!

A cardboard locker caught fire in the basement and soon this whole Dayton, Ohio, building was ablaze. Date: January 6, 1950. Loss: $291,500.

There's a Pyrene for every fire hazard

The right extinguisher at the right time can often prevent enormous losses. Whatever your fire hazard, there's a Pyrene* to cope with it—for Pyrene makes everything from hand extinguishers to complete automatic fire-fighting systems.

*T.M. Reg. U.S. Pat. Off.



Vaporizing Liquid — Most practical for all-purpose use.

Cartridge-Operated — For ordinary fires. No annual recharging . . .

Chemical Foam — For flammable liquids, ordinary combustibles.

Systems — Large and small, manual and automatic.

Soda-Acid, Pump Tank and other approved extinguishers

PYRENE MANUFACTURING COMPANY
693 Belmont Avenue **Newark 8, New Jersey**
Affiliated with C-O-Two Fire Equipment Co.
For details, use Key # S-16 on prepaid card on page 77

Safety Greetings

THE International Harvester Company, Melrose Park, Illinois, has installed four large changeable copy signs, one at each entrance, to be used in a continuing program of selling safety to the employees.

The porcelain steel panel assemblies which form the backgrounds for the signs measure 48" high by 15 feet long. Three rows of 8-inch red and blue plastic letters are used to form the safety messages which are changed at least twice a week.

Picture by courtesy of Wagner Sign Service, Inc.

Association Safety Efforts Recognized

A HIGHPOINT in the sessions of the 40th National Safety Congress and Exposition held in Chicago was the presentation of the National Safety Council's new award for exceptional service to safety to six member trade associations.

The awards were presented by Ned H. Dearborn, president of the Council, at a special luncheon meeting for small business and association executives. The six associations honored are:

American Hospital Association
American Meat Institute
Associated General Contractors of America, Inc.
Folding Paper Box Association of America
Portland Cement Association
United States Brewers Foundation

The new award, to be issued annually, gives recognition to associations for the general excellence of their safety programs and for their contribution to the reduction of occupational injuries in their industries. In making the awards the Council's technical committee and committee of judges took into consideration accident prevention activities such as publicity, safety conferences, contests and publication of technical material.

The presentation luncheon followed the "association swap-shop session," an exchange of successful safety activity ideas by and for association executives. Immediately following the luncheon there was a discussion on how small business can control accidents.

Free details on products advertised in this issue may be obtained by sending in the Inquiry Card on page 77.

Safety Design Wins Match Book Award

NATIONAL LEAD COMPANY, Titanium Division, of St. Louis, Mo., has been awarded a "Joshua," symbolizing first prize for the most distinguished use of match book advertising by a chemical products manufacturer during the last year, the Match Industry Information Bureau has announced. The "Joshua," a bronze wall plaque in the shape of a match book, was named for Joshua Pusey, a Philadelphia patent attorney who invented match books. Winners were selected in 43 classifications of products and services.

National Lead Company received top award in its classification for an unusual and original series of designs directed to employees in its own plants to improve safety practices, according to the panel of ten judges made up of top officials of advertising trade groups and publications. The judges praised clever, down-to-earth wording and illustrations which "Speak the language of the employees." D. W. Fiock, safety director, received the plaque for his company.

A certificate denoting best match book design in all classifications was awarded by the judges to the Titanium Division of the National Lead Company, for a series of six different designs created to improve safety practices among plant employees.

Optical Plastics

(Continued from page 32)

allyl base plastic family which has by far greater resistance to scratching than any lens previously made from this new plastic material.* It can be cast in lenses of all shapes and sizes which will fit into any standard spectacle frames.

Yes—optical safety plastics have really come of age. It is hard to tell what the future holds because of the tremendous amount of research and development presently under way and this will increase with time. The demand for optical safety plastics is increasing day by day and there is one thing certain—all-plastic safety goggles are doing a good job and, like the automobile and airplane, they are here to stay.

* Readers may obtain the name of the manufacturer of this new lens by writing to the Editor.

Picture by courtesy of the Bakelite Co.

GREATEST ADVANCE IN

eye safety

SINCE THE INVENTION OF GOGGLES

K-LENS-M

Brings Clear Safe Vision to Your Workers

Here's the modern way to promote the wearing of Safety Goggles. Install **K-LENS-M** Lens Cleaning Cabinets with **K-LENS-M** Anti-Fogging Stations, endorsed by Safety Engineers, to provide clean, clear safety goggles for your workers. **K-LENS-M** Lens Cleaner and **K-LENS-M** Anti-Fogging Liquid are used by leading manufacturing plants, packing houses, canneries, public utilities, government installations and business offices.

Easy-to-use, safe, EFFECTIVE ON GLASS OR PLASTIC.

Long-lasting **K-LENS-M** Liquid and Tissues are dispensed by a compact metal dispenser cabinet containing large bottles of **K-LENS-M** Lens Cleaner and **K-LENS-M** Anti-Fogging Liquid as well as lint-free tissue. Equipped with spray pumps and disposal space for used tissue. Easy to install, use and service.

Also available for off-premise use in individual pocket-size plastic "Twinkit", containing a bottle of **K-LENS-M** *Lens Cleaner and a bottle of* **K-LENS-M** *Anti-Fogging Liquid.*

K-LENS-M Complete Lens Cleaning and Anti-Fogging Equipment

THE **WILKINS** CO.
INCORPORATED
CORTLAND 2, N. Y.

Manufacturers of
K-LENS-M

Liquid Lens Cleaner
Lint-Free Lens Tissues
Anti-Fogging Liquid
Dispenser Cabinets
Anti-Fogging Station

For full details, use Key # S-17 on prepaid Inquiry Card on page 77

One OF WINGUARDS

On January 31, 1952, one of the country's outstanding metallurgical research laboratories was commissioned to make comparative strength tests on safety box toes, with testing specimens and testing methods in compliance to ASA specifications. The averaging of their compression and impact testing figures certifies WINGUARD 400 and 500 to be 45+% stronger – and safer –

$\overline{M}$ is the Roman numeral for the quantity million. As concerns WINGUARDS the figure should actually be II $\overline{M}$ since there are two toes to a pair.

million pairs

safest STEEL BOX TOES

than non-wing types otherwise related in height, profile and contour.

WINGUARD 400—"dress" type usually used in oxfords.
WINGUARD 500—"work" type used in more rugged shoe constructions.

We feel this clinical proofing of their superior safety advantages is undeniably linked to the fact that on July 30th, we shipped the millionth pair of WINGUARDS.

In case #6913, B/L 28872, P.O. #A1127, Production Order B-11888, consigned to Daoust, Lalonde Inc., Montreal, P. Q., Canada.

— one of the forty-eight safety shoe manufacturers in the United States and Canada licensed to use WINGUARD steel safety box toes.

For full details, use Key # S-18 on prepaid Inquiry Card on page 77

Wrought iron pipe, in which a heated anti-freeze solution will be circulated, will be embedded in concrete to provide a trucking area free of winter snow.

Snow-Melting System

RECONSTRUCTION of the plant loading area of the Hewitt Rubber Div., Hewitt-Robins, Inc. in Buffalo, N. Y., is expected to result in substantial operating economies, while eliminating most of the hazards and costly delays caused by the heavy snowfalls of northern New York State.

Company officials have good reason to believe their new snow melting system of wrought iron coils embedded in the concrete pavement of the loading area is the most efficient and practical solution to the dual problem of snow removal and disposal. A hot water-antifreeze solution is circulated through the coils, warming the paved area and melting the snow as it falls.

Snow melting is not an innovation at the Hewitt Division. The Buffalo plant made one of the first industrial installations for melting snow and ice in 1944, when two runs of 1¼-inch wrought iron pipe were laid under one of the truck driveways which was then being resurfaced.

On the many occasions during the past eight winters, when the rest of the plant area has been clogged with snow, the runs of wrought iron pipe, in which exhaust steam is utilized, have kept the 80-foot by eight-foot driveway completely free of ice and snow.

The new snow melting system which will service the plant's entire loading area incorporates the most recent advances in the design of modern snow-melting installations. Since quick drying, as well as complete melting, is an objective of the new system, pipes are spaced 18, instead of 32 inches apart, as in the original installation.

An area 110 feet in depth and 71 feet wide will be serviced by the new snow melting system. The first section of the system was tried last winter and was reported to have worked perfectly by James B. Eadie, plant engineer, Hewitt Rubber Div., Hewitt-Robins, Inc.

The second section of the new installation will have been completed by the coming winter, at which time the whole system will be put in operation.

Picture by courtesy of A. M. Byers Co.

Safety Code for Gas Pipe Lines

A SAFETY code for gas pipe lines and distribution systems—covering material, design, fabrication, installation, testing, and operation—has just been approved by the American Standards Association. This document is the new Section 8 of the American Standard, Code for Pressure Piping, B31.1–1951. This new section, designated as B31.1c–1952, is a consolidation of those parts of the existing Code for Pressure Piping pertaining to gas piping.

Section 8 of the Code for Pressure Piping was prepared and published separately as a guide in the construction of pipe lines for gas transmission and distribution to meet a current need in connection with the construction of cross-country gas pipe lines. The separate publication eliminates the necessity for cross-referencing to other sections of the code. The new Section 8, whose technical requirements are identical with those in the code, will be included as the last section in future editions of the Pressure Piping Code.

Subcommittee No. 8 has a membership of 52 representatives of gas transmission and gas distribution companies; pipe companies; valve and fitting companies; independent research groups; technical universities; consulting engineers; and government agencies.

The new standard has chapters dealing with piping components, pipe joints, fabrication details, and requirements after installation, and the final chapter consists of tables and illustrations.

In developing Section 8 for separate publication, the subcommittee reviewed specifications and codes already formulated or in the process of preparation by other agencies, and drew upon the resources of the technical groups represented in its membership. The major consideration of the group was the public safety aspect of the specifications.

Sponsoring organization for the Section 8 code is the American Society of Mechanical Engineers. Copies of the American Standard, Section 8, Code for Pressure Piping, B31.1c–1952 will be available from the American Standards Association, 70 East 45 Street, New York 17, N. Y., or from the American Society of Mechanical Engineers, 29 West 39 Street, New York, N. Y.

Forging Safety Code

A SAFETY code embodying provisions for safety in the use of power-forging machinery for both drop forging and flat-die forging has just been approved by the American Standards Association. This document is the American Standard Safety Code for Forging and Hot Metal Stamping, B24.1–1952.

The code applies to all classes of power-forging machinery and incidental operations and equipment in connection with such machinery. General requirements are given for working and aisle space, construction of platforms, lighting, head and foot protection, and safety clothing and safety devices. Specific requirements are included for all hammers, steam and pneumatic hammers, mechanically operated hammers, board drop hammers, and other machines, such as hydraulic presses, cold-trim presses, hot saws, etc. Special provisions are also given with respect to furnaces—the hood, insulation of sides, and pressure release devices.

Accompanying the code is an illustrated appendix giving pictorial evidence of some of the items mentioned in the code, such as location of controls, working platforms, guards, safety devices, positioning of equipment, and the like.

The code, which is a revision of a 1927 edition, is consistent with up-to-date forging practices and operations. Its provisions are recommended for adoption by state labor departments in order that there may be uniformity of requirements throughout the country. The code is also designed for the voluntary adoption by individual forging companies and by insurance companies and other organizations concerned with industrial safety.

The National Safety Council and the Drop Forging Association sponsored the development of the standard under the procedures of the American Standards Association.

Copies of the Safety Code may be obtained from the American Standards Association, 70 East 45 Street, New York 17, at $1.00 per copy.

"We all feel safer since our Safety Director SPECIFIED Scott Air-Paks"

TRADE MARK

★ Yes, SCOTT AIR-PAKS give employees working in hazardous fumes complete breathing protection, enabling maintenance and repair jobs to be completed quicker and easier. Men wearing safe, efficient SCOTT AIR-PAKS under such conditions work with confidence because they know they will get all the fresh, cool air they want, no matter how hard they work. Extremely low in operating costs, simple to use and fast in action, Scott Air-Paks insure greater economies in your plant.

Write for Bulletin No. 510 showing all models or call in your Safety Equipment Dealer today!

Thousands of SCOTT AIR-PAKS are helping to make hard jobs easier and safer, throughout the Nation's industries.

ESTABLISHED IN 1932 Scott FOR SAFETY—FOR SERVICE

SAFETY EQUIPMENT DIVISION

SCOTT AVIATION CORP.

217 ERIE ST., LANCASTER, N. Y.

CANADA: SAFETY SUPPLY CO., TORONTO — BRANCHES IN ALL PRINCIPAL CITIES

EXPORT: SOUTHERN OXYGEN CO., 157 Chambers Street, New York 7, N. Y.

For details, use Key # S-19 on prepaid card on page 77

TRANSPORTATION

Motor Carrier Fire Accidents

THE Safety Section of the Bureau of Motor Carriers of the Interstate Commerce Commission has issued an analysis of fire accidents based on reports submitted by contract motor carriers subject to its jurisdiction.

According to the analysis, fire accidents for 1950 increased to 591, or slightly more than 12 percent above the 527 such accidents in 1949. Property damage was $4,995,248.

Mechanical defects were directly the cause of 129, or 22 percent, of all the reported fire accidents. Overheated tires, with 37 accidents, and defective wiring, with 25 accidents, were the most frequent of these mechanical defects causing fire accidents.

The age of the vehicle does not affect appreciably, if at all, the likelihood that the vehicle will be involved in a fire caused by a mechanical defect. Thus, lack of maintenance, rather than age, seems to be the pertinent factor in mechanical-defect fire accidents.

Over one third of the fires started at the fuel tank, almost a quarter in the engine compartment, and about ten percent in the cargo space.

The analysis again indicates the value of adequate fire extinguishers and properly constructed and located fuel tanks. It also points out the dangers resulting from improperly trained drivers and loaders and from equipment deficient because of a lack of adequate inspection and repair.

Stop Gasoline Losses

GASOLINE retailers can reduce their liquid losses and increase their profits simultaneously if they follow the tips and suggestions contained in a colorful booklet just published by the American Petroleum Institute.

Entitled "Stop Gasoline Losses," the new publication pounds home such facts as this:

"What does one tiny leak in your equipment mean to you? Only two leaking drops per second add up in a year to a loss of 1,350 gallons . . . a lot of profit dollars to leak away, and some 20,000 good driving miles for your customers.

"If you neglect repairs so that the leaking drops break into a steady stream, you and your customers lose 8,780 gallons a year."

The new booklet has the light, cartoon-style format which made a similar publication for bulk station operations ("Less Loss, More Profit") so popular when it was published last year. Printed in two colors, it has 16 fact-packed pages that are bound to be of help to gasoline retailers.

The booklet was prepared by a sub-committee of the Committee for the Development of a Service Program for Marketers, and the Oil Industry Information Committee. The sub-committee is headed by J. H. McClintock of Esso Standard Oil Co., New York, and is part of the API's Division of Marketing. "Stop Gasoline Losses" is being made available to the industry at cost, $40.00 per thousand.

Psychological Tests of Tractor-Trailer Drivers

DRIVERS employed by six large tractor-trailer companies operating on the east coast with home terminals in North Carolina were the subjects of a study conducted by D. J. Moffie, Head of the Department of Psychology, Andrew Symmes and Charles Milton, North Carolina State College. The research embodied interviews, psychological testing, psychological paper and pencil tests, and accident follow-ups to disclose the relationship between psychological tests and tractor-trailer driver performance.

Accident data were secured from the accident files of each company. All companies classified accidents as preventable or non-preventable. In some cases the chargeability of the accidents was determined by a board of safety supervisors in the personnel and safety departments. In the other cases chargeability was determined by the safety supervisor only. An accident was classified as preventable if the driver could have foreseen and avoided the accident by any conceivable means.

The study was divided into three parts: 1. an accident group of 30 drivers was matched against an equal number of accident-free drivers on the basis of months worked. Differences between mean test scores were computed; 2. one hundred drivers who had driven an average of 10.82 months were studied. Pearson product-moment correlations were computed between test scores and the accident index, which was determined by assigning a weight of three points for preventable and two points for non-preventable accidents, divided by the number of months worked; and 3. thirty-one drivers who had been on the job from 12 to 18 months were studied. The average time driven was 15.72 months. In this part also, Pearson product-moment correlations were used to determine the relationships between tests scores and the accident index.

Test Results

In the first part of the study, significant differences were found on

(Continued on page 46)

Automatic Control of Carbon Monoxide

WITH the installation recently of a new carbon monoxide detector, New York City's huge municipal omnibus garage and maintenance center, which has the distinction of being "the world's largest bus garage," became equipped with one of the most efficient carbon monoxide control systems in the world, according to safety engineers who have observed the instrumentation in action. While the application of this new type of detector in this instance involves protection against carbon monoxide concentration in an automotive storage, repair and maintenance shop, the instrumentation can readily be applied to detection, recording and control in connection with manufacturing, chemical processing or any other industrial use. The apparatus is already being adopted widely for carbon monoxide detection and control in automotive depots and shops, vehicular tunnels, underground parking stations and similar areas where concentration of toxic gases creates a safety engineering problem.

New York's mammoth facility was planned by and built under the supervision of the city's Board of Transportation, which operates the depot. With a floor area of over 13 acres, it can accommodate more than 3000 buses. The ground floor is used for storage, servicing and minor repair work, a second floor is devoted to complete reconditioning shops, and a top floor is given over to administration and engineering quarters, control facilities, classrooms and the like.

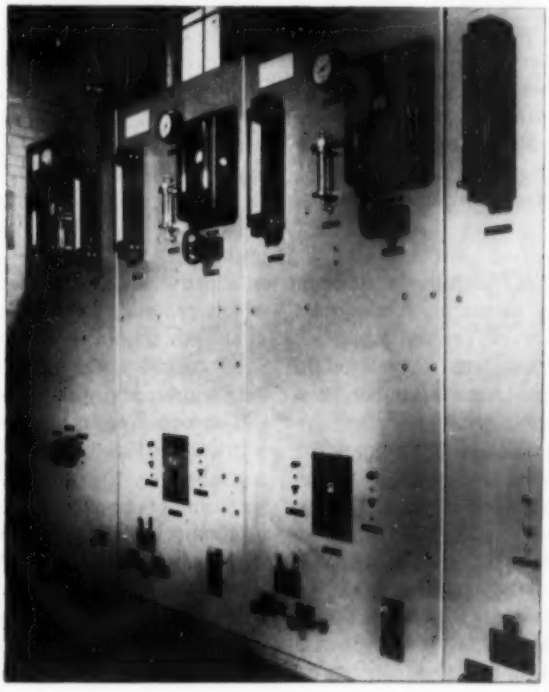
The system is completely automatic. It provides continuous sampling and chemical analysis of air pumped from various areas in the depot, sounds an alarm when any analysis shows undue concentration of carbon monoxide, and keeps a permanent record of analysis results for future reference.

How It Works

Air intake tubes installed at forty-two points throughout the depot lead to a centrally-located analyzer unit, where the air is analyzed and the detector and recording elements of the system are housed. Air is drawn by vacuum pump through the tube and into an improved type of cartridge air filter and charcoal tower which removes contaminants such as dust, suspended oil particles, hydrocarbons and acid gases. A cartesian manostat controls the rate of air flow which is measured by a rotometer.

The air then flows into the analyzer cell where the carbon monoxide is converted to carbon dioxide. Heat generated in this exothermic

"World's Largest Bus Garage" installs latest type carbon monoxide detector-recorder



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reaction is proportional to the concentration of CO in the sample. This heat generates a voltage in a thermopile which is converted into a measurement of CO concentration in parts per ten thousand by a potentiometric recorder. Visual indication of the measurement and a continuous graphic record is provided and fan controls may be operated.

This method circumvents the harmful effect which the presence of water vapor in the air has had on the accuracy of carbon monoxide analysis as conducted by past methods. It also eliminates the handicap to accurate analysis hitherto imposed by use of air driers required by older systems.

The new detector-recorder registers variations as small as five one-hundredths of a part of CO in ten thousand parts of air. When the depot was built, it was equipped with a giant ventilating system with a blower output of 1,437,950 cubic feet per minute. This permits an air change every six minutes in the three million cubic-foot garage area on the first floor, every 12 minutes in the lower ceiling area and every 20 minutes in the higher-ceiling area of the second floor, and every 8 minutes in offices and classrooms. Thus, with its new detector and recording system, and this amply adequate ventilating system, the municipal facility is equipped with a toxicity control instrumentation which represents the maximum in safety protection for the more than five hundred workers who are regularly employed in the huge building.

The new-detector-recorder system was designed and manufactured by specialists in the design and construction of electronic and electromechanical instrumentation for testing, measuring and control for public utilities, industry and the military services. They have already installed similar detectors in New York's 179th Street tunnel, and additional units are being fabricated for the newly-built First Avenue tunnel under United Nations Plaza. The system will also be installed in Caracas's new municipal tunnel under the Venezuelan city's "Rockefeller Center" development.

Picture by courtesy of Taller & Cooper, Inc.

Psychological Tests

(Continued from page 44)

some of the scales of the personality tests, the mechanical comprehension tests, and the vocational interest tests. According to the personality tests, the accident-free drivers tend to be more tense, less self-sufficient, and less dominant than the accident driver. On the mechanical comprehension tests, the accident-free driver made higher scores, indicating greater comprehension of mechanical principles. This was also true on computational interest, that is, accident-free drivers have a higher interest in computational activities.

In the second part of the study, the results tended to substantiate the results disclosed in Part I.

Noticeable differences in results among the three groups were indicated. The people conducting the study are inclined to believe that such differences are primarily due to the samples utilized. There may be changes in psychological composition because of the hazardous conditions of the job, the dual type of operation, and the disruption of home life. Also, selective factors such as discharge from the job and voluntary terminations may alter the nature of the group so that the psychological traits of drivers who remain on the job longer vary appreciably from the ones who stay for shorter intervals. In this connection it should be mentioned that ideally one should give these tests periodically to detect and evaluate such personality changes. Furthermore, some insight may be gained as to what general characteristics, if any, distinguish the voluntary turnover group from the group that has been discharged.

None of the tests showed signifi-

cant relationship with the criterion of all three groups. In general one may say, however, that the more proficient drivers have a better understanding of general mechanical principles than the ones who have poorer accident records. One may also surmise that the negative relationship between self-sufficiency and the better drivers indicates that they are dependent upon others and therefore more hesitant and cautious in their driving habits. These drivers are more likely to size up traffic situations before proceeding.

However, one cannot select a driver on the basis of a particular area of interest or one personality trait without examining all test results. It is the pattern of abilities, interests, or personality traits that should receive consideration collectively rather than one or two taken alone. In this respect a multiple correlation would be the best statistical treatment to utilize because it permits a multiple analysis of numerous factors and their interaction.

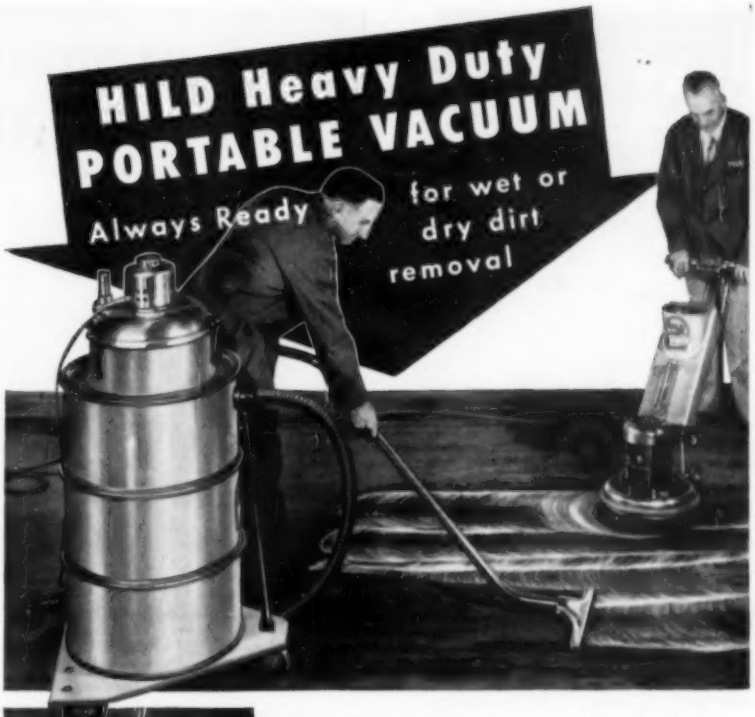
Greater Interest in Traffic Safety Needed

THE nation's traffic accident problem is "rapidly getting out of hand" and will continue to do so unless broad, new programs for highway safety reform by state and municipal government officials are accompanied by "a more selfless pooling of the traffic accident prevention resources at our disposal," the American Society of Safety Engineers was warned by Mr. Thomas N. Boate, accident prevention department manager of the Association of Casualty and Surety Companies.

Mr. Boate declared "it would be not at all unlikely for the future to find us really struggling to contain the situation, to say nothing of making any real headway in its improvement," without wider use being made of the means for controlling traffic accidents, the level of safety activities being stepped up, and a general pooling of highway accident prevention knowledge accumulated by safety engineers and others during the last four decades.

"In recent years," Mr. Boate said, "the status of highway safety must be regarded as anything but good. The situation, as a matter of fact, strikes many of us as one of rapid deterioration. The number and use of motor vehicles continue to increase rapidly without the benefit of commensurate increase in the means for their accommodation or control. The motor vehicle accident curve, both in number and severity of accidents, continues to climb. While a certain stability in the motor vehicle accident rate can be pointed to, the fact remains that each year we kill and injure more people; each year we waste more dollars; each year the

(Continued on page 48)



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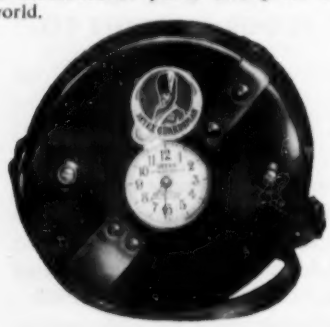

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SAFETY MAINTENANCE & PRODUCTION Salutes a Safety Idea for NOVEMBER

Simplified Battery Handling

HERE'S an ingenious idea for handling industrial truck batteries. The idea, reported by Gould-National Batteries, Inc., eliminates lifting and avoids the necessity of an overhead crane. It can be used in any industry—chemical, foods, paint, metals, rubber, shipping, bottling, etc.—wherever industrial trucks are used.

The idea was developed by the Distribution Terminal Warehouse, Cleveland, Ohio, and involves the design of a four-wheel battery-cart. A novel feature of the homemade carrier is its use of a four-foot section of roller-conveyor as a bed. This construction permits batteries to be rolled on or off the cart rather than lifted. Other battery-cart components include four 2-foot sections of structural angle iron, four casters and some scrap wood.

To assemble such a battery-cart, secure a caster to each corner of the conveyor-section so that the section rolls freely on the floor. Weld a structural angle at each corner of the section, perpendicular to it and on the opposite side from the casters. The angles form uprights for a framework which prevents the battery from being pushed off the cart. To complete the framework, bolt 2x8-inch planks across both sides and one end of it. The 2x8 at the other end should be removable to allow the battery to be rolled on and off the conveyor-section.

When removing a battery, the workman simply rolls the carrier to the "walkie" truck and slides the battery onto the conveyor-section. The carrier is then pushed to a charging location. Since Distribution Terminal Warehouse has a carrier for each battery, carriers are not unloaded during charging. A night attendant puts the batteries on charge and records the battery number, date, specific gravity, charger number, voltage and charging time. The next morning a workman rolls carriers to the trucks and replaces the now fully charged batteries.

Picture by courtesy of Gould-National Batteries, Inc.

Greater Interest Needed

(Continued from page 47)

loss to society grows greater.

"Many officials of state and municipal government—and it is here in public administration that the first and greatest responsibility for highway safety lies—continue to play an ineffectual role, either through lack of understanding of the problem, or failure to inaugurate the programs of reform, both legislative and administrative, needed for its solution."

Mr. Boate declared there is "a stolid resistance" to anything that even suggests a curtailment of what is considered by the public to be its "right" to drive. He described this "resistance" on the part of the public, and its lack of appreciation of the urgent need for control through improved motor vehicle administration, as "a far more serious form in which the attitude of the public

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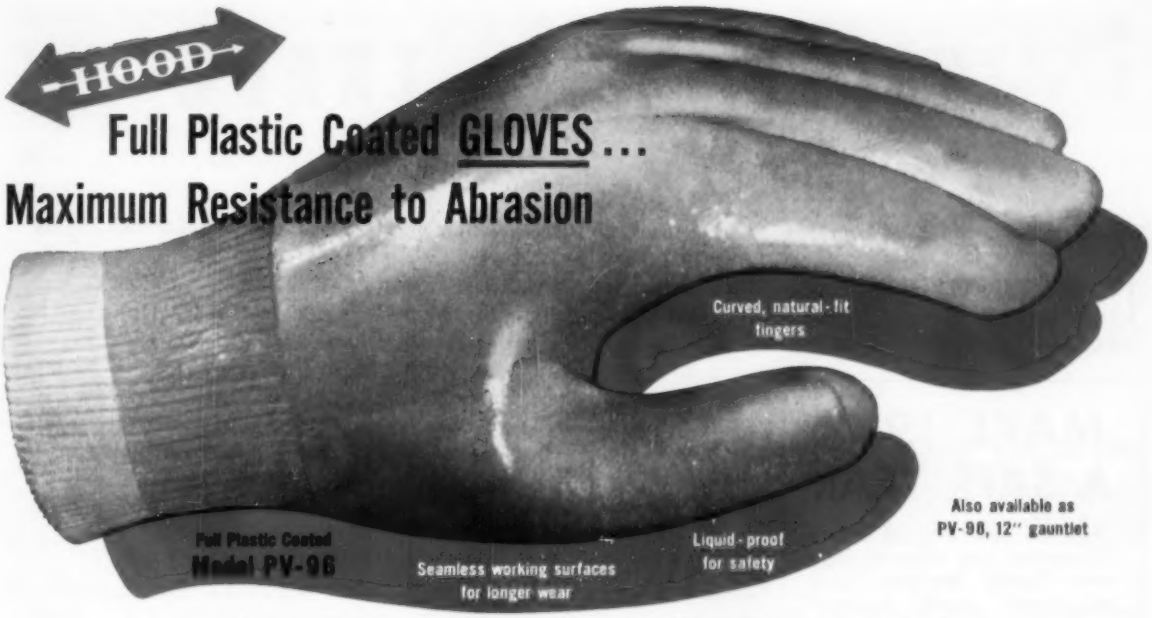

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toward the control of traffic manifests itself."

Control Measures

Tighter control measures that are needed over "the highway, the automobile and the driver," according to Mr. Boate, are the following:

1. A general tightening up and complete uniformity of traffic laws.
2. Enactment of "reasonable but absolute" top speed limits and their strict enforcement.
3. Reorganization of state and municipal police departments together with an increase in personnel and facilities for uniform traffic control.
4. Impartial enforcement of the law by police and the courts.
5. Increased emphasis on the suspension and revocation of licenses.
6. Appropriate regulation of pedestrian traffic.
7. Greater use of the principles of traffic engineering in regulating vehicular and pedestrian traffic.
8. Improved driver-licensing procedures with unconditional refusal to license the unqualified.
9. Better procedures for the treatment of accident repeaters and chronic law violators, either through rehabilitation and correction, or through withdrawal of the driving privilege.
10. Periodic inspection of all motor vehicles.

"Regardless of the knowledge that these are some of the immediate steps to be taken if a higher degree of safety on streets and highways is to be achieved," said Mr. Boate, "our position, as far as the taking of regulatory action is concerned, remains static. We are faced, on the one hand, with the immovability, in these directions, of state and local government, where the action must originate; and on the other hand, with an inert public—and remember it is a driving public, to the tune today of 65 million of its members licensed to operate an automobile—neither educated to the need for nor acceptance of regulatory controls; a public that remains basically disinterested, non-receptive and strongly resistive."

Mr. Boate declared that traffic safety advocates "can plan and blueprint, and analyze and recommend, inspire and point the way, all they want to; but in the end, they must have the support of the responsible officials of state and local government, for action." He described this as the most critical problem in highway safety today—"critical because its solution is such an obvious necessity; critical because its answer is still not clear."

Whatever "the fault or default" of public officials charged with finding some of the answers to the highway safety problem, Mr. Boate asserted, "the result is no leadership, no finely-meshed web of effort, no organization for turning on the machinery of effective action when

(Continued on page 52)

INSIDE THE TRADE

New Company Markets Solvents

JOHN B. MOORE, formerly general sales manager of the Aviation-Industrial Division of Fine Organics, Inc. is preparing to enter the safety solvent field as a marketer. In addition to the sale of solvent products, his firm, the John B. Moore Corporation of Nutley, N. J., will offer safety consultation service to interested industrial firms. Mr. Moore, a member of the Society of Automotive Engineers, is known for his work in the original development of safety solvent blends as well as for his survey of the maintenance cleaning problems of the operating aircraft industry.

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Gustin-Bacon Appoints N. Y. Manager

GUSTIN-BACON MANUFACTURING COMPANY, of Kansas City, Mo., and New York, announces the appointment of Edward A. McCabe as manager of its New York division. Mr. McCabe, who lives in Yonkers, will be in charge of all glass fiber insulation, industrial and railroad division sales in New England, New York, New Jersey, Pennsylvania and Delaware.

Mr. McCabe has been with Gustin-Bacon since 1942. Prior to that time, he was Special Engineer in the office of the executive vice-president of the New York Central System.

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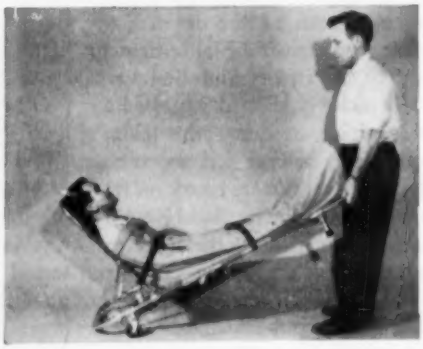

For details, use # S-25 on prepaid card, page 77

Petroleum Association Elects

ARTHUR W. SCOTT, president of Wolf's Head Oil Refining Co., Inc., Oil City, Pa., was elected president of the National Petroleum Association. He succeeded Earle M. Craig, chairman of the board of Freedom-Valvoline Oil Co., Freedom, Pa.

Fred G. Bannerot, Jr., president of Elk Refining Co., Charleston, W. Va., was elected first vice president, and Paul R. Beck, president of Pennsylvania Refining Co., Butler, Pa., was elected second vice president.

E. M. Lyons, of Philadelphia, G. B. Hunter, of Oil City, Pa., and Margaret Miller, of Washington, were re-elected recording secretary, treasurer and assistant treasurer, respectively.

Executives Named for New Westinghouse Plant

DONALD E. JENKINS has been appointed plant manager of the Westinghouse Electric Corporation's new Vicksburg, Miss., Lighting Division plant and Thomas G. Cameron has been named superintendent of manufacturing.

The new plant manager comes to Vicksburg from the post of industrial relations manager for the Lighting Division. A native of Scranton, Pa., Mr. Jenkins was graduated from Pennsylvania State College in 1927 and joined Westinghouse at Cleveland in 1935.

After holding the post of sales promotion manager for the Lighting Division, he transferred to the field of industrial relations and in 1944, was named a supervisor. He became manager of industrial relations in 1951, from which post he comes to his new assignment.

The new superintendent of manu-

facturing, Thomas Cameron, holds a Bachelor of Business Administration degree from Westminster College.

Mr. Cameron joined Westinghouse in 1936 at the Transformer Division in Sharon, Pa., where he worked in stores, material-handling, production, and manufacturing. He also was employed in cost accounting and contract terminations departments both at Sharon and Pittsburgh headquarters. In 1947, he was transferred to the Lighting Division at Cleveland as supervisory budget accountant, in which position he remained until 1951 when he was named administrative assistant on the manager's staff.

The new multi-million dollar plant at Vicksburg is part of the 296 million dollar expansion program being carried out by Westinghouse. It will be the largest in the nation devoted exclusively to the manufacture of lighting fixtures. The plant, which will employ from 500 to 800 people when in full operation, is scheduled for completion by fall of 1953.

John Hewson Distributors

THE John Hewson Company has announced the appointment of three additional representatives to handle the sales, field application, and servicing of its line of high voltage insulation test sets and high voltage power supplies, high speed static control systems and electronic static detection and warning installations.

These newly appointed representatives are: Cooper-Morgan Inc., P. O. Box 152, Hamburg, New York; Naylor Electric Co., State Tower Building, Syracuse 2, New York; Rittenhouse & McGuire Co., 311 Alexander St., Rochester 4, New York.

Macwhyte Company Announces New Directors and Officers

AT A meeting of the board of directors of Macwhyte Company (manufacturers of wire rope), the following were elected directors: E. C. Berg (Vice President and Controller), G. Johnston (Treasurer and Assistant Secretary), M. A. Buntrock (Secretary and Assistant Treasurer).

Other directors and officers of the Company are as follows: George C. Wilder, President, R. B. Whyte, V. P. Charge Operations, Robert P. Tyler, V. P. Charge Sales, H. E. Sawyer, Richard P. Cavanagh, James T. Wilson.

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For details, use # S-26 on prepaid card on page 77

Building Products Research

THE Certain-teed Products Corporation, Ardmore, Pa., one of the nation's leading manufacturers of building materials, has completed a new engineering and research center in nearby Paoli, Pa.

The structure, in which all product development and testing and plant engineering will be centered, is also a large-scale showplace—a

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practical exhibition of the company's building products. Certain-teed has incorporated in the new building its own standard construction products.

Inside the structure, constant research in the development of new products and quality control work on its many lines of materials will be carried on in the engineering department and the chemical analysis department. Here also the roofing and gypsum divisions of the company will each maintain its own research and testing sections in addition to research and testing done at the company's plants throughout the country.

Greater Interest

(Continued from page 49)

needed, no joining of forces, when a united effort is the thing most desperately needed." He added that "the fact that we are unable to point to really effective state and local organizations for traffic safety is probably the most serious mark against us" during the past four decades of the highway safety movement.

"Such organization, it would seem clear," said Mr. Boate, "has three requisites:

"First, the assumption of the responsibility for initiating action by the officials of public administration in state and local government where such responsibility rightfully belongs; secondly, the establishment of open lines of communication and of improved cooperation between the officially-acting agencies of government and the non-governmental, nationally recognized agencies of traffic safety; thirdly, the creation of an attitude of public acceptance and of active and aggressive public support in favor of stricter regulatory measures."

Mental Factors in Traffic Accidents

MEN who can't stand foolish questions or who have nagging wives don't make safe drivers of buses or trucks, the annual convention of the Greater New York Safety Council was told.

Dr. Harold Brandaleone, medical director of the Surface Transportation Corp. of New York City, told the commercial vehicle session that the corporation, which operates the Third Avenue transit system, had cut its accidents almost in half, improved the health of its employees, and saved itself $100,000 a year since reorganizing its medical department in 1947.

The major points of the new safety program, Dr. Brandaleone declared, were establishment of a rigid type of pre-employment examination, which eliminated one-third of all driver job applicants; creation of an extended medical service for all employees, and institution of periodic re-examination of all drivers. He said that the pre-employment examinations included, besides medical examination and the American Transit Association motor tests, a psycho-physical examination which consists of detailed vision tests and mental examina-

tions. Findings are checked against past employment and military medical records which sometimes reveal a dormant defect that would interfere with an applicant's ability to operate a bus or truck, Dr. Brandaleone said.

"One candidate gave a normal history and was found to be physically qualified," Dr. Brandaleone said. "However, he stated to the examining physician that crowds of people aggravate him and make him nervous and that he could not stand foolish questions. He was rejected. It was found later that this candidate was discharged from the armed forces because of psycho-neurosis."

Illustrating the workings of re-examinations, Dr. Brandaleone said:

"A 28-year-old operator was referred to the Medical Department by the Safety Department because of three accidents in two months. His past accident record had been excellent. Physically he was within normal limits. During the medical interview it was discovered that he had been married recently.

"His wife was a Californian and was anxious to return to her home state. The operator feared that he would not be able to obtain a position and support his wife there. This led to constant bickering between the newlyweds with an unsatisfactory home life. On advice of the Medical Department, the operator took a leave of absence so that he could go to California. He returned within five weeks with the information that his wife preferred New York to the West Coast and that the difficulties were over between them. He has been driving a bus for the past two years and has had no further accidents."

Dr. Brandaleone said that in 1946, the last year before institution of the new program, the company had 10,178 accidents. The number in 1951 was 5,669.

Safety Engineer

(Continued from page 28)

wherefore's from the safety standpoint. It is supervision's important job to see that their people understand the instructions and—further—that they understand the importance of carrying out their instructions in the prescribed way. Instructions *must make* sense to the receiver. This is the final essence of accident prevention in the chemical industry.

From an address presented at the 1952 Central States Safety Conference.

Pictures by courtesy of American Cyanamid Co.

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DEATH FROM RUBBER CEMENT

A YOUNG man was engaged in shifting drums of rubber cement in a stock room. He was using a mechanical hoist to lift the drums by means of a hook which gripped opposite sides of the top bead on the drums. An open-top 55-gallon drum, nearly full, slipped from the hoist and fell about two feet to the floor. About ten gallons of the material splashed out, covering the worker's head and about 60 percent of his body. He was able to go to his foreman for assistance, but a few minutes later he collapsed. Artificial respiration was applied immediately, but the worker was dead on admittance to a hospital a half hour later. The medical examiner reported the cause of death as acute respiratory failure following inhalation of benzol, a compound of rubber cement. Later analysis showed that the solvent used in the rubber cement was commercial benzene. The use of rubber cement containing benzene has been discontinued in this plant.

FAULTY INSTALLATION

WHEN a power press was installed, it was not firmly anchored to the floor. Operation of the press caused the machine to move against another press so that the limit stop was damaged. As a result, the press "repeated." The operator had his hand in the working area at the time and lost one finger.

A BALE OF TROUBLE

A WORKER was removing steel bands from bales of crude rubber as they came down a conveyor. The wire had been cut from the bale and was being removed when the end flew up and struck the worker in the eye. He was not wearing safety goggles. The employee was taken to a hospital and had to have the eye removed. There is hardly an industrial job that does not require eye protection. Even visitors to working areas should be supplied with protective eyewear.

HASTE MAKES WASTE

A TOOL and die apprentice was operating a heavy duty shaper on a piece of hardened stock. He was in a hurry so he held the clapper box up off the stock by grasping the tool post, and cranked the feed back in preparation for the next cut. The tool post slipped out of his hand. The tool bit dropped into the operating position too soon and hogged into the stock, tearing out a large chip. The chip struck the employee with such force that it knocked him down, and the blow shattered one lens of his safety goggles. Although some particles of glass had to be removed from his eye, the employee was not seriously injured. If he had not been wearing eye protection of sufficient strength to break the impact of the steel chip, he certainly would have lost his eye and might have even been fatally injured.

Learning the hard way

CHAIN OF CIRCUMSTANCES

THE perfect breeding ground for accidents is the spot where a lot of people are a little careless about a lot of little things. Last spring there was a fire which caused considerable damage but which never should have occurred in the first place. A new wing was being added to a building, and it was found that a sprinkler main running parallel to the addition had frozen. The sprinkler system was shut off late in the afternoon but a few minutes later smoke was discovered at the construction area. A supposedly flameproof tarpaulin separated the new building from the old. Sparks from a cutting torch had ignited the tarpaulin and the fire spread to some stored stock nearby. Extinguishers were unable to control the blaze. Employees hauled out a hose line, but the hose was too short and the water had been turned off. Eventually the system was turned on, and, in spite of the cracked fittings, the sprinklers kept the fire under control until the fire department arrived.

FIREWORKS

DURING a change of shifts, one employee was conversing with some friends when another employee tossed a fire cracker into the group. The explosion caused a small piece of loose concrete or a small stone to fly up and strike the employee on the head. He received a laceration over the eye. The company clown who tossed the fire cracker was not only breaking the company rules about horseplay but also the laws of his particular city which ban the use of fireworks.

FLYING SAUCER EXPLODES

A POLISHING wheel that was mounted on a lathe exploded into several pieces, one of which struck a bystander, fracturing his arm and severing a tendon. Polishing and grinding wheels must be carefully inspected for any defects before mounting. They must also be carefully installed and run at speeds for which they were designed.

GAS HAZARDS

THE use of natural or manufactured gas has become so common that it is now taken for granted. The hazards of gas were emphasized recently when an underground gas main was damaged during excavation operations. The leaking gas ignited and the explosion totally destroyed a nearby building. Leaking gas may travel a considerable distance, usually following some type of piping, to accumulate in unfrequented basements and little used areas. A spark from any source will ignite it. Buried pipes inside buildings and the passage of pipes through foundation walls below grade should be avoided. Such pipes should be encased in larger pipes to divert any leakage to a safe escape. Pipes should be brought into buildings above grade so that leaking gas will be carried off in the open air. Periodic inspections of basements and "crawl spaces" are desirable to detect leakage. All sources of ignition should be avoided and fresh air inlets kept open.

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THE FIRE FRONT

New Fire Film

A NEW 16 mm sound fire protection film "Crusaders Against Fire" produced in color, sponsored by the National Automatic Sprinkler and Fire Control Association of New York City, is available for showing free of charge to service clubs, business associations, industrial plants, fire chief associations or any group interested in fire protection. The film is of 16 minutes duration.

Additional information concerning this film may be obtained by writing the National Automatic Sprinkler and Fire Control Association, 205 East 42nd Street, New York 17, New York.

Need for Automatic Fire Detection

"NO DEGREE of care which it is reasonable to expect of ordinary human beings will protect the modern home from fire." This statement, by Mr. W. G. Holmes, appears in a new pamphlet just released by the National Fire Protection Association entitled "Automatic Fire Detection for the Home." It emphasizes the author's conviction that fire deaths in the home are caused by delayed discovery of fire which automatic detection equipment eliminates.

The pamphlet, part of the NFPA technical services to its members and the public is available for 25 cents per copy, discounts for quantities, and can be secured by writing to the Association's Office at 60 Batterymarch St., Boston 10, Mass.

Mr. Holmes, Secretary of the Automatic Fire Alarm Association, cites specific death-dealing home fires and shows how automatic detection equipment of the "approved" types would prevent such tragedies. The case histories are convincing and the conclusions clearly indicated.

Magnesium Hazards

ON THE night of December 15, back in 1943, in the business district of Dallas it was bright as a summer noon. Five miles away, more than half a million dollars was spectacularly on fire—a new incendiary bomb-casing plant, stacked high with government magnesium. Victim of war-time priorities, the plant had been allotted a part-wood building, with plywood ventilating ducts, for making incendiary bombs. In that time of widespread use of magnesium for fire-bombs, ignorance of its complex combustion habits was still too general. One of the plywood ventilating ducts had caught fire that winter night, stationed as it was . . . eighteen inches from a magnesium mold heated by a gas flame. The building obviously built to burn became an enormous bomb. To fight the blaze at its beginning, streams of carbon tetrachloride from hand-thrown glass "bulbs" were used, but were ineffective, just as water would have been, on the molten magnesium. For this metal can take oxygen for combustion from water, releasing hydrogen to form additional fuel; it can burn in an atmosphere of chlorine just as well, which it removes from carbon tetrachloride extinguishers, for instance; it even burns in carbon dioxide atmospheres, and combines with nitrogen under fire conditions. Yet magnesium fires can be controlled.

How this is done, is explained in a sixteen-page 25c pamphlet, the June 1952 "*Standards for Magnesium*," released by the National Fire Protection Association. This booklet, prepared by the NFPA's expert

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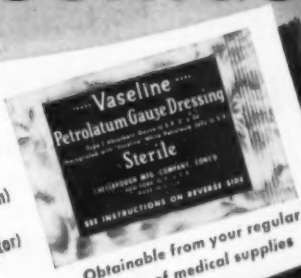

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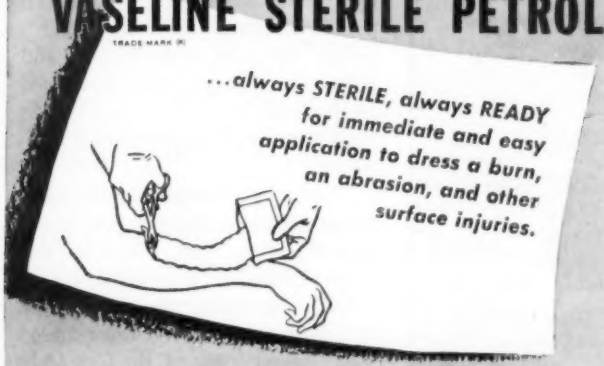
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Committee on Combustible Metals, under Chairman Hylton R. Brown of the U. S. Bureau of Mines, offers the soundest practical measures for magnesium fire control. Since 1896, nonprofit NFPA has kept the continent up to date in all types of fire control and prevention from its Boston headquarters at 60 Batterymarch Street.

Though far from a comic book, "*Standards for Magnesium*" holds the attention with its combustible subject matter. Although magnesium in the pure form has a melting point around 1204° F, its alloys will melt in some cases as low as 800°. Magnesium alloys are used more and more in furniture, machine parts, appliances, buildings, airplanes and ships; they are valuable, flammable, yet controllable materials. Due to the high heat conductivity of magnesium, it is difficult to ignite a sizable piece of the metal from a small source of heat. Like wood, however, in the form of chips or powder or other finely divided state magnesium is highly flammable.

Methods of Control

In this new revision of the "*Standards*" (NFPA No. 48), increasing stress is laid on the danger of accumulated magnesium dust, whether on the floors, the walls, or even on the employes. You can't have any pockets if you work around magnesium! The general purpose of the booklet "is to call attention to the fire and explosion hazards in the storage, handling and processing of magnesium alloys . . . and to emphasize the measures that can be adopted for the control of such hazards." In concise outline form the pamphlet, directed toward foundries, processing plants and commercial storage facilities, introduces the subject by describing the properties of magnesium, spot tests for its detection, and details of its combustibility and explosibility.

Among the sections, which are numbered for ready reference, there are discussions of the Storage of Pigs, Ingots and Billets (not more than a million pounds in a pile outdoors, or half that amount, 500,000 pounds, for indoor piles); Melting and Casting (easy access to melt rooms, exclusion of combustible materials, extreme care in housekeeping); Rough Finishing (sawing and coarse grinding, approved electrical equipment, supplies of approved extinguishing powder, suitable covered steel containers); Heat Treating (temperature controls, boron trichloride gas for controlling oven fires, sprinklers with oven covered); Storage of Castings (heavy and light); Handling and Disposal of Scrap (chips, turnings, foundry dust); Processing-Plant operations, including Storage (heavy castings in piles not more than 1,250 cubic feet in volume, light castings, 1,000 cubic feet), Machining, Grinding, Buffing, Wire Brushing, Dust Collecting (wet systems, with detailed illustrations), Drawing & Spinning, Welding, Handling of Magnesium Fines, Fire

Helpful ideas toward reducing
INDUSTRIAL ACCIDENTS

Accident prevention in your plant hinges upon the knowledge and action of your supervisors, the key men in any industrial safety program. Our booklet, "Safety As It Applies to Supervisors," stresses this fact and presents information and recommendations based on the wide experience and observation of our staff of safety engineers. You will find it worthy of your personal attention. Write for a copy today, without obligation.

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Protection (supplies of approved extinguishing powder, automatic sprinklers and alarm systems, substantial tote boxes, longhandled shovels); Commercial Storage of Magnesium — Castings, Structural Shapes and Finished Articles, and Magnesium Fines.

Throughout the "Standards for Magnesium," good housekeeping is heavily stressed; incessant dusting, and cleaning of equipment; nonspark materials for tools, floors, benches and shoes; special clothing and face guards; handy supplies of extinguishing powder; readily accessible exits; meticulous disposal of wastes. In summary, the key to the control of magnesium is informed and intelligent caution. There are times when fire departments have used large volumes of water, with success, to extinguish magnesium blazes. And in reverse, there is still many an occasion for the foreman in a magnesium plant to post the doubly significant sign:

"NO SPITTING ALLOWED!"

Fire Inspection Film

A DOCUMENTARY film showing how special agents of fire insurance companies give free fire hazard inspections to towns throughout America was released recently.

Entitled "The Magnolia Story," the film is a pictorial record of an actual town inspection that took place in Magnolia, Arkansas, last spring. The town inspection in Magnolia was staged by the Arkansas State Fire Prevention Association, with the cooperation of the Chamber of Commerce and the local fire department.

The picture was produced by the National Board of Fire Underwriters for distribution by state fire prevention associations and field clubs for showings before public officials, civic clubs, schools, fire departments and other groups.

The film shows how the insurance company fieldmen planned the inspection, and how they went through every public and commercial building in the city to locate more than 500 hazards in a three-day drive. It emphasizes that these inspections are entirely voluntary. While the inspectors correct no hazards themselves, they leave stickers and tags on the hazards to call them to the attention of the property owners. A follow-up campaign showed that more than 60 per cent of the hazards were corrected by owners within a few days after the inspection.

The fieldmen's public education efforts are also shown. A colorful fire department demonstration, a parade, fire drills in the schools, and a fire clown stage show were used by the fieldmen to draw attention to their three-day fire prevention campaign.

"It takes a holocaust to make some towns conscious of fire dangers," the picture states, "but Magnolia was taught through inspection."

Such educational campaigns, given as a public service, can bring added safety to many towns, the film adds.

The 20-minute film, which is in 16 mm color, was written and photographed by J. Wendell Sether, NBFU's director of public information. Sound recording and editing was done by the Fletcher Smith Studios, Inc., New York, N. Y.

Prints can be obtained for showing to organizations by writing to the Bureau of Communication Research, Inc., 13 East 37th Street, New York 17, N. Y.

LP Gas Fires

OPERATING on the principle of profiting by experience, the National Fire Protection Association regularly provides its members and the public with data on fires and explosions. In a forty-page pamphlet just released by the NFPA, there is a study of "LP Gas Fires and Explosions" as reported to the Association over a twenty-year period.

"LP Gas," standing for liquefied petroleum gas (sometimes called "bottle gas," propane, butane, etc.), has been used with remarkable safety

over the years since the industry has been cooperating with the NFPA, fire departments and insurance authorities to assure proper installation of equipment. The 129 cases of fires and explosions reviewed in the new NFPA pamphlet are the exceptions. It is interesting to note that in almost every case, deviations from the NFPA Standards for the Storage and Handling of Liquefied Petroleum Gases were evident.

Copies of this pamphlet, illustrated with 27 photographs, are available for 50 cents each from the NFPA office at 60 Batterymarch Street, Boston 10, Mass. For ease in use, the incidents are indexed by property classes and grouped together in the text.

Fire Tests of Escalator Shutters

UNPROTECTED escalator openings in department stores and other large, multistoried buildings may allow a fire to spread with great rapidity. To reduce this type of hazard, the Building Exits Code of the National Fire Protection Association recommends that each moving stairway above street level be equipped with a rolling shutter that will automatically close the top of the stairway when fire or smoke is detected in its vicinity. Automatic shutters of this kind have been installed in many buildings, but definite information on their effectiveness has been lacking. Recently N. D. Mitchell, E. W. Bender, and J. V. Ryan of the National Bureau of Standards completed fire tests [1] of escalator shutters submitted by manufacturers, providing information of interest to architects and builders, as well as regulatory bodies concerned with specifications or building-code requirements.

In general, the shutters tested consist of galvanized steel slats which travel on rollers in steel guide rails. Automatic closure may be obtained by any standard fire- or smoke-sensitive system.

Three fire tests were made: an exploratory test to determine the adequacy of the shutter and guides alone, and two full-scale tests in which the supporting frames and runways were used. The shutters were installed over a floor-test furnace, and fires were applied to the underside of the installation. Temperatures were measured by means of chromel-alumel thermocouples protected by porcelain insulators and encased in wrought-iron pipes sealed at one end. The furnace temperature was raised to 1700°F in one hour, and to 1925°F in three hours in accordance with the ASA standard method for fire tests. The tests were discontinued at the end of three hours.

In each of the tests the shutters sagged, the guides were somewhat

1 For further details, see Fire resistance of shutters for moving-stairway openings, by Nolan D. Mitchell, Edward W. Bender, and James V. Ryan, NBS Building Materials and Structures Report 129, available from U. S. Government Printing Office, Washington 25, D. C., at a cost of 10 cents.

3
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Industrial
FOOTWEAR IS BEST!
BAR-FLEX
Patented outside arch and heel that adds to comfort and gives better traction.
Neoprene Oilace Boot shown is available with or without Bar-Flex feature. Neoprene—a special compound that resists oil, grease and acids. Also available, a short black industrial boot with DURATEST Bar-Flex outsole.
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Tested to withstand 2000 lbs. pressure! Here is genuine tested protection against toe injuries—the most common foot hazard to a worker!
Workin—6" all rubber work shoe with appearance of a leather shoe, DURATEST non-skid outsole, cushion insole. Steeltoe or plain. Also, a new Pullon work shoe, of similar construction.
DURATEST
A new "tougher" rubber compound that gives better resistance to abrasion resulting in longer wear. Tested for extra quality and durability — DURATEST.
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save accidents
save money on the
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. . . and enjoy the safety of the greatest feature ever built into a ladder — the Dayton "safety level" working platform. Check the "big 6" features that make a Dayton your best buy!

1. Rail-guarded "Safety Level" platform.
2. Locks in place automatically.
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4. Light weight — great strength.
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Dayton safety ladders

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deformed, and the rollers were damaged by burning and loss of lubrication. However, as the fire did not spread up through the shutters, they were considered to have successfully performed their function. Retraction after the fire was difficult, but this did not affect the main function of the shutter. As a result of the tests, design changes have been recommended, particularly to allow for thermal expansion in the guide rails.

Plant Fire Truck

A UNIQUE plant fire truck that can easily negotiate narrow factory aisles has been designed by plant protection officials of the Chevrolet Division of General Motors in Baltimore.

The designers, Chief of Plant Protection Ray Wilder and Chief of Fire Prevention Walter Helm, equipped an industrial towing truck with a 140-pound dry chemical fire extinguishing unit behind the driver's seat. They also placed two hand extinguishers on each front fender.

The truck also carries a 20-foot extension ladder, an oxygen-generating breathing apparatus, rubber boots, rope, fire axes, siren, headlights, a powerful portable searchlight, a 50-pound carbon dioxide cylinder and a vaporizing liquid type extinguisher. Thus, it constitutes a "lethal fire killing weapon," says Mr. Wilder.

"The truck is powerful, maneuverable, and small enough to reach any place in the plant," he adds.

Picture by courtesy of Ansul Chemical Co.

New Type Sprinklers

ONE of the most significant changes in the design of automatic sprinklers for fire protection purposes since their introduction in 1860 is described in a new pamphlet just released by the National Fire Protection Association. Entitled "New Developments in Upright Sprinklers," the pamphlet is available for 50 cents a copy from the Association at 60 Batterymarch Street, Boston 10, Mass.

The author, Mr. Norman J. Thompson, Director of the Factory Mutual Laboratories, describes the need for the new design, the early experimental work by his Laboratories and why the new design gives superior performance. He views the new design as being particularly useful as "a replacement for the present standard approved sprinkler in locations where the fire hazard approaches the limit of ordinary sprinkler capacity or where water supply is somewhat scant."

In releasing this research report, the NFPA is bringing to its members and the public important new developments in the art of fire protection, a service for which the nonprofit, technical and educational or-

ganization was founded 56 years ago. The text is as it appeared in the July 1952 NFPA Quarterly, the Association's technical journal distributed to all its members.

Mounting Fire Costs

FIRE losses throughout the United States, when measured in dollars, are at an all-time high and going higher!

This was reported by the National Board of Fire Underwriters as the nation, spurred by President Truman's proclamation of Fire Prevention Week, took stock of its $730 million loss in property and 11,000 lives.

According to John R. Cooney, president of the National Board of Fire Underwriters, much of this loss in lives and property resulted from fire in the home. He cited the estimate of 856,703 fires in U. S. cities last year. "Nearly half or 418,871 of them," he said, "were building fires, nearly three-fourths of them, or 293,776, being residences."

The major causes of these fires, he added, were careless use of matches and smoking and misuse of electricity. Such carelessness, he declared, accounts for close to 40 per cent of the nation's reported fire losses.

Mr. Cooney stated: "This year, when the facts become known, I believe they will be even more appalling than last year's. Already, on the basis of figures for the first eight months of this year, property loss is 5.6 per cent above that of the corresponding period for 1951."

He expressed particular concern over the property loss sustained by America's Manufacturing industry. He said that of the 305,000 manufacturing firms, some 23,000 or approximately eight per cent were struck by fire last year and suffered heavy loss in valuable equipment and production. In some instances fire brought about complete business failure because of uninsured and under-insured losses.

He pointed out that replacement costs and production loss are not included in the $730 million fire loss for 1951. "Were they to be included, replacement costs alone would have doubled that figure," he said.

"That single factor—spiraling replacement costs—makes this aspect of our nation's fire loss bill many, many times more than $730 million," Mr. Cooney declared.

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ELASTIC ADHESIVE BANDAGES

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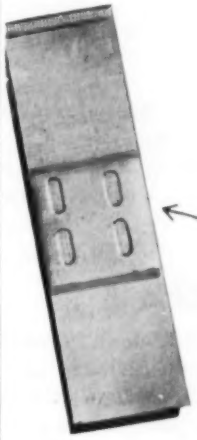
Size 1" x 3"
Another Davis presentation . . . flesh color adhesive bandage that's practically invisible and stays neat and clean for days. Weather, oil and chemical proof, the Davis bandage is naturally the choice of industry. Flexible and thin, it doesn't restrict movement (especially when bending the knuckle) and it stays put for days. Available in the following units: No. 103N, 16 per D carton; 103aN, 100 per box.



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ADHESIVE BANDAGES
THAT "BREATHE" MORE FREELY

Extra large size (1 in. by 3⅜ in., with 4 ventilation slots instead of the usual 2. Completely waterproof, and the special fold of crinoline eliminates touching of bandage (pad) while opening. Unit No. 103D, 16 per D carton; unit No. 103aD, 100 per box.

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Crash Fires

"AIRCRAFT Crash Rescue Problems" are analyzed in a new publication by that name just released by the National Fire Protection Association, the non-profit technical and educational organization to promote the science of fire protection. Written by George

(Continued on page 64)

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THE Future SHOWS

Cincinnati, Ohio

November 12–13. Second Annual Greater Cincinnati Safety Conference & Exhibit. (Gibson Hotel) Kenneth R. Miller, Coordinator, c/o Greater Cincinnati Safety Council, 1203 Federal Reserve Bank Bldg., Cincinnati 2, Ohio.

Atlantic City

November 13–14. Second Annual Rutgers Occupational Vision Conference, sponsored by Rutgers University Extension Division, New Brunswick, N. J.

Cleveland, Ohio

January 19–22. Fourth Annual Plant Maintenance Show & Conference, (Public Auditorium). Clapp & Poliak, Inc., exposition managers, 341 Madison Ave., New York 17, N. Y.

Milwaukee, Wis.

January 29–30 Eleventh Annual Meeting & Exposition Wisconsin Council of Safety and Industrial Nurses Section, State Nurses Association (Hotel Schroeder). R. W. Gillette, secretary Wisconsin Safety Council, State Office Bldg.—Room 234, 1 W. Wilson St., Madison 2, Wis.

Atlanta, Ga.

March 1–3. Thirteenth Southern Safety Conference & Exposition. (Atlanta Biltmore Hotel). W. L. Groth, executive director, P. O. Box 8927, Richmond 25, Va.

Philadelphia, Pa.

March 3–4. Nineteenth Annual Philadelphia Regional Safety & Fire Conference & Exhibit (Bellevue-Stratford Hotel). W. W. Matthews, Managing Director, Philadelphia Chamber of Commerce Safety Council, 17th & Sansom Sts., Philadelphia 3, Pa.

New York, N. Y.

March 24–27. Twenty-third Annual Greater New York Safety Convention & Exposition. (Hotel Statler). E. Willard Merritt, general chairman, Greater New York Safety Council, Inc., 60 E. 42nd St., New York 17, N. Y.

Boston, Mass.

March 30–31. Thirty-second Annual Massachusetts Safety Conference & Exposition (Hotel Statler). Edgar F. Copell, President-Director, Mass. Safety Council, 31 State St., Boston 9, Mass.

Kansas City, Mo.

April 9–11. Central States Safety Congress (Hotel President). George M. Burns, Director, Kansas City Safety Council, 419 Dwight Bldg., Kansas City 6, Mo.

Charleston, W. Va.

April 22–24. Annual Conference & Exhibit West Virginia Safety Council, Inc. Mrs. W. C. Easley, 316 Masonic Bldg., Charleston, W. Va.

Pittsburgh, Pa.

April 28–30. Twenty-eighth Annual Western Pennsylvania Safety Conference & Exhibit. Harry H. Brainerd, executive secretary, 605 Park Bldg., Pittsburgh 22, Pa.

Vision Conference

MR. CHARLES F. McCUEN, Vice President in charge of Research for General Motors Corporation, heads an outstanding program of industrial, medical, safety, and vision experts who will address the Second Annual Rutgers Occupational Vision Conference in Atlantic City November 13 and 14.

The two-day conference will feature addresses, panel discussions, and educational displays demonstrating conservation of vision, protection of eyes against injury, and the increase of industrial efficiency through better vision procedures.

A forum on visual efficiency and production will open the conference Thursday morning, November 13. Conference members will have a choice during that afternoon between a forum on eye safety or a forum on conservation of vision.

On Friday the morning session will be devoted to a forum on aids for better seeing.

The economic aspects of occupational vision will be considered during the final session.

A feature of this year's conference is an educational display demonstrating vision screening, protective eye devices, conservation methods, and industrial applications of optics and visual efficiency.

Maintenance Conference

SIXTY-SIX separate sessions on maintenance problems, by far the most exhaustive treatment of the subject ever undertaken, have been scheduled for the Plant Maintenance Conference, which will be held at the Public Auditorium, Cleveland, Jan 19–22, inclusive, it was announced by Clapp & Poliak, Inc., New York, which conducts the conference.

The sessions, twice the number conducted last year, will take place concurrently with the Plant Maintenance Show. L. C. Morrow, consulting editor, Factory Management and Maintenance, will be chairman.

Included in the discussions will be three panels, 16 sectional conferences, 42 roundtables, four plant tours and a banquet.

Maintenance problems in 11 industries will come in for special discussions. These include automotive, chemical, electrical manufacturing, food processing and packaging, foundries, paper mills and paper products, petroleum refining, printing and binding, rubber goods, steel mills and fabricating plants, and textiles.

Separate conferences also will be held for maintenance problems in small, medium and large plants. These groupings will be according to the number of maintenance employees and will range from 1–50 maintenance employees, 51–100, 101–300, 301–800, and over 800. Similarly, plant engineering problems will be discussed in separate groups, divided according to the number of maintenance employees engaged in the work.

Panel Discussions

Panel discussions, involving top management policy, will include "Planning and Scheduling Maintenance Work," "Maintenance Costs and Budgets," "Training Maintenance Workers and Supervisors," "Work Standards and Measurements" and "Growing Pains of an Engineering-Maintenance Organization."

Other topics to which conferences will be devoted include organization, operating policies, preventive maintenance, building maintenance, mechanical equipment, electrical equipment, power plant equipment and prevention and control of corrosion.

Roundtables will cover "area vs.

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centralized maintenance," dealing with union labor, incentives and work measurement, lighting, lubrication, project control, pumps and piping, sanitation, selling management on the maintenance program and maintenance stores.

One of the major features of the conference will be the continuation of the sessions over two-day periods to permit extended audience participation in question and answer periods.

The conference annually attracts about 2,500 plant executives and is easily the largest such meeting in the world. An additional 12,000 are expected to attend the show.

The exposition will also set a new mark. It is expected to be almost 75 per cent larger than in 1952 and will cover an area of 110,000 square feet. It will have almost four times the number of exhibiting companies and cover about six times the area of the first show held in 1950. Virtually every type of equipment needed for maintenance operations will be on display. A number of companies will have huge exhibits covering more than 3,000 square feet.

Advanced registration cards and hotel information may be obtained from Clapp & Poliak, Inc., 341 Madison Ave., New York 17, N. Y.

Crash Fires

(Continued from page 61)

Tryon, Secretary of the NFPA's Aviation Committee, the sixteen page pamphlet is directed to fire departments and reviews aircraft fire accident experience as a basis for the conclusions presented.

According to Mr. Tryon, rescue of persons involved in aircraft fire accidents depends upon aircraft design factors, the severity of the impact and whether fire control or extinguishment can be secured. The pamphlet discusses each of these phases using actual incidents to illustrate the conclusions. Thirty-six photographs and six diagrams are used to assist the reader in understanding the problems involved. Copies of the pamphlet are available from the NFPA at 60 Batterymarch Street, Boston 10, Mass. for $1.50 each.

STATEMENT OF THE OWNERSHIP, MANAGEMENT, CIRCULATION, Etc., REQUIRED BY THE ACT OF CONGRESS OF AUGUST 24, 1912, OF SAFETY MAINTENANCE AND PRODUCTION, published monthly at Rensselaer, N. Y., for October 1, 1952.

State of New York, County of New York, ss. Before me, a Notary Public in and for the State and County aforesaid, personally appeared Arthur Snyder, who, having been duly sworn according to law, deposes and says that he is the business manager of SAFETY MAINTENANCE AND PRODUCTION, and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management and circulation of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in Section 411, Postal Laws and Regulations, printed on the reverse of this form, to wit:

1. That the names and addresses of the publisher, editor, managing editor and business managers, respectively, are: Publisher, Alfred M. Best Co., Inc., Executive Offices, 75 Fulton St., New York, N. Y.; Editor-in-Chief, Alfred M. Best; Editor, Harry Armand; Business Manager, Arthur Snyder, all of 75 Fulton Street, New York, N. Y.

2. That the owner is Alfred M. Best Company, Inc., 75 Fulton St., New York, N. Y.; and that the owners of 1% or more of the stock are:

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3. That the known bondholders, mortgagees and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages or other securities are: None.

4. That the two paragraphs next above, giving the names of the owners, stockholders and securities holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company, but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees hold stock and securities in a capacity other than that of a bona fide ownership; and this affiant has no reason to believe that any other person, association or corporation has any interest, direct or indirect in the said stock, bonds or other securities than as so stated by him.

ARTHUR SYNDER,
Business Manager.

Sworn to and subscribed before me this 15th day of September, 1952.

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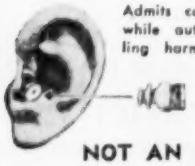

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industrial Hygiene

ASSOCIATE EDITOR
JACOB A. GOLDBERG, A.M., Ph.D.

Arthur Miller demonstrates the new method of artificial respiration to representatives of post units at Camp Pickett, Virginia.

Army Learns Newest Method of Life Saving

REPRESENTATIVES of civilian offices at Camp Pickett, Virginia, gathered recently to hear and see the modern methods in first aid demonstrated by Mr. Arthur R. Miller, of the American Red Cross National office in Alexandria, Virginia, under the guidance of Mr. L. E. Fisher, Post safety director.

Offices of the Post that were represented at the 15-hour class were the Post Ordnance, Quartermaster, Transportation, Civilian Personnel, Safety and Special Services sections.

Miller said that these representatives are being trained in the latest method—the back pressure, arm lift—used in artificial respiration, which has been adopted by all agencies concerned with the saving of lives.

On their return to the sections of the post where they are employed, the students will train personnel of their respective organizations in first aid methods.

Public Health Meeting

SCIENCE'S newest developments that will help prevent sickness, stop pollution of our food, water and air, and rehabilitate our disabled were revealed at the 80th Annual Meeting of the American Public Health Association when it met in Cleveland, Ohio, recently.

The annual meetings of 38 related organizations were held at the same time. Headquarters were the Public Auditorium in Cleveland and some 5,000 public health specialists from all parts of the free world attended.

According to Dr. Reginald M. Atwater, Executive Secretary of the Association, "Each new innovation in our way of life creates a new health frontier."

This was reflected in the program which covered the problems which spring out of a highly industrialized society, such as those created by jet planes, atomic bombs, and the structural requirements of our future hospitals.

Other health sessions touched on the individual in his different roles as child, parent, patient, worker, citizen and soldier, evaluating all the modern safeguards against illness, disability and disease from the unborn to the aged.

These and scores of other related topics were discussed by distinguished leaders in medicine, public health, dentistry, nursing, education, government, labor and business.

At the first general session addresses of welcome were made at the Music Hall, Public Auditorium, by the Hon. Frank J. Lausche, Governor of Ohio, the Hon. Thomas A. Burke, Mayor of Cleveland, and Dr. Harold J. Knapp, Commissioner of Health of Cleveland. Dr. Gaylord W. Anderson, University of Minnesota, President of the Association, gave the presidential address. The Lasker Awards of 1952 for outstanding achievements in public health were presented at this session.

Health films, and scientific and technical exhibits sup-

(Continued on page 69)

DUST

FEATURE

This is the second of a series of three feature articles on Dust & Fume Control. The next article will appear in the December issue of SAFETY MAINTENANCE & PRODUCTION.

Dust deposit is picked up by vacuum system which has permanently installed piping.

DUST-REMOVAL is a serious problem for many industries, especially those handling such materials as aluminum, lead, or zinc, coal and coke, cement, cork, cocoa, spice, flour and grains, starch, sugar, textiles, or wood. It is a problem not only because the large volume of dust generated by the manufacturing process makes the dust a nuisance, but also because hidden dangers lurk in dust deposits. These hidden dangers constitute a threat to the industry's safety, its maintenance, and its production.

The breathing of dust-laden air day after day is a serious hazard to the health of workers. In many cases, toxic and pneumoconiosis-producing dusts can seriously injure workers when inhaled and even cause death. In plants where dust is permitted to accumulate, it sifts down from overhead structures and is constantly stirred up from the floor. The plant atmosphere becomes filled with fine particles—unseen, yet a constant health menace.

Dust is also a menace to the quality of the finished product and to plant equipment. When it settles on machinery it causes excessive wear. Accumulations destroy paint, and often rust and corrode steelwork. Dust is frequently a source of heavy expense through damage to semi-finished products.

Floor cleaning operation using portable equipment.

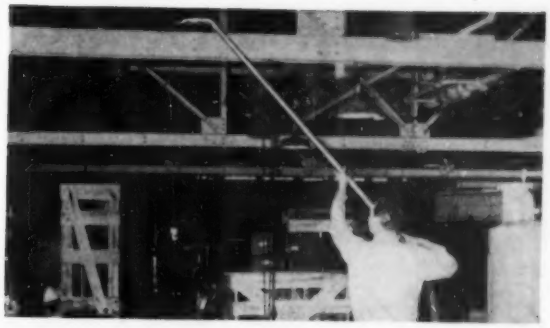
Dust not only damages but also destroys. Over the years, hundreds of workmen have been killed and injured and many millions of dollars worth of property has been destroyed because of dust explosions and resultant fires. The real damage is usually caused when long-standing accumulations of dust, dislodged by the primary flash, ignite and explode with terrific destructive force.

For detailed descriptions of dust removal equipment, see pages 303–310 and 321–345 of "Best's Safety & Maintenance Directory," 1952–53 edition.

Dust Removal

The answer to the menace of dust is obviously to remove the dust itself. This statement is not, however,

REMOVAL'S A MUST!



Cleaning overhead beam with special vacuum brush.

Why is dust a menace to industry?
How can dust be controlled most efficiently?
What factors govern the selection of vacuum equipment?

as simple as it first sounds. Dust that has accumulated on overhead beams, ledges, piping and walls constitutes the most serious menace and it is difficult to remove by ordinary cleaning methods. Brushing it by hand or blowing it off with compressed air merely scatters the dust over everything below and in the long run creates an additional cleaning problem.

Much of the overhead dust deposit originates from dusty floors. The activity of workmen and the movement of trucks soon scatters it throughout the plant. Ordinary sweeping will remove some of the dust particles, but it also stirs up clouds of fine, powdery dust that remains suspended in the air and finally settles on walls, overhead structures, machinery and equipment.

A portable vacuum unit being used for wall cleaning.

What is needed, then, is a method which will actually remove dust, instead of giving the dust a new resting place within the plant. Furthermore, the method should be capable of removing not only the dust from floors but also the accumulations on pipes, beams and other hard-to-reach places. Such a method is readily available and it is the use of vacuum equipment, which, by the force of an in-drawn air stream, picks up the dust, carries it away and deposits it in a dust container.

Vacuum Systems

Vacuum equipment for industrial cleaning is of two general types: the stationary vacuum system in which the vacuum producer and dust separators are permanently located and connected to a stationary piping system throughout the plant, with convenient outlets for attaching cleaning hose; and the portable vacuum units which are self-contained and can be moved around the plant for cleaning operations as desired.

In most industrial plants, the stationary system offers a number of advantages. Since the apparatus need not be moved about the building, more powerful motors and larger exhausters may be used with separators of greater capacity. Widely separated parts of the plant may be cleaned simultaneously and at a moment's notice. All the dust is collected at one point and the exhaust air is discharged out of doors.

To design a convenient and efficient system, the vacuum producer, separators, piping and nozzles must be carefully coordinated. If the desired results are to be obtained, the entire system must function as a well balanced unit. Some of the factors which must be taken into consideration are as follows:

1. Size and type of building.
2. Nature of dust or other material to be collected; approximate daily floor accumulation; weight per cubic foot.
3. Desired frequency of overhead cleaning; maximum

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number of sweepers to operate simultaneously.

4. Preferred location for exhauster and dust separators.

5. Nature of electric current available for use in the plant.

Dust Separators

The number of dust separators for any given system depends on the nature of the dust, the amount to be collected and the manner in which it is to be finally disposed of. It is usually most economical as well as most convenient to use one or more primary separators followed by one secondary on the final stage.

The primary separators are generally of the centrifugal type and will collect nearly all the dust entering the system. Only the fine light dust is carried over for final separation.

The action of the secondary separator often combines the centrifugal separation used in the primary with a final filtration of the air through dust bags.

Vacuum is Versatile

With the installation of a vacuum system, cleaning of floors, walls or overhead may be done at any time. No dust is scattered and there is no interference with plant routine. All the dirt, coarse litter and fine dust alike, is drawn into the nozzle and conveyed through the hose and pipe lines to the dust separators. There are no swept-up piles of dirt to be rehandled. All the dust collected remains in the separators.

The wide variety of nozzle attachments available, with or without extension handles, makes it possible to clean thoroughly and efficiently all types of surfaces and inaccessible places. There are nozzles for floors and walls, overhead piping, ledges, corners and windows. Special rubber and fiber tools should be used around electrical equipment.

Although vacuum systems are designed primarily to overcome the hazards of dust accumulations, their usefulness is not restricted to sweeping and cleaning. The system can be used for dedusting of enameled parts during the process of manufacture. Dust and metal chips that pile up around working parts can be continuously exhausted through correctly designed nozzles. Permanent suction heads may be placed on automatic machines to collect chips or to salvage and recover particles of valuable metals.

Vacuum Units

The decision as to whether a permanently piped stationary system should be installed or whether the work can be effectively handled with portable vacuum units frequently involves a close study of a plant's individual requirements. In general, however, the portable units are recommended where complete piping would be too expensive, where the dust deposits are hazardous but not heavy, and where dust accumulates at widely scattered points.

Heavy-duty industrial vacuum units have the vacuum producer and dust separator mounted on a four-wheel hand truck which can easily be pulled by one man. Most models provide for one sweeping or cleaning attachment, but larger capacity units are also available for two sweepers working at the same time or for larger size hose where the dust accumulations are particularly heavy. Like the vacuum systems, the portable units can take advantage of a wide variety of nozzle designs for general and specialized cleaning problems.

Most of the portable units utilize an electric motor and require an electrical outlet for operation. There are also gasoline-engine powered units for use where electric service is not available, such as outdoor areas or large plants with scattered cleaning problems.

The modern and efficient way to dust control is through vacuum cleaning. The surfaces reached by the nozzle are really cleaned and no dust is created to float in the air and finally settle on machinery and product. Regularly scheduled floor cleaning operations, plus an occasional removal of dust accumulations from the overhead, will keep plants sanitary and free from dust hazards.

Story and pictures by courtesy of U. S. Hoffman Machinery Corp.

Cities Fight Noise

THREE U. S. cities—Atlanta, Jacksonville and Memphis—have been designated winners of the 1952 achievement award plaques of the National Noise Abatement Council for outstanding effort in their communities in resisting the growing problem of excessive noise, it was announced by Paul Washburn, president.

While the three Southern cities were selected to receive the Council's achievement plaque for leadership in the battle of the decibels, four other cities also were awarded certificates by the council for exceptional civic service in conducting activities aimed at curbing din in home, office, street and factory, or for inaugurating a program. These cities were Salt Lake City, Little Rock, Dearborn, Mich., and Glendale, Cal. The Council also decided to grant a certificate of merit to the League for Less Noise of New York, of which Ernest H. Peabody, a pioneer in the anti-noise movement, is president, for its efforts to reduce traffic noise.

Memphis has won the achievement award for the eleventh time and is regarded as one of the quietest cities in the United States. The program there is spearheaded by Police Commissioner Claude Armour and is a city project. The Atlanta Women's Chamber of Commerce is sponsor of the noise abatement program there while in Jacksonville it is conducted by a special committee of the Chamber of Commerce. The plaques will be officially presented to these cities this fall by Sam L. Hooper, former president of the Council and a member of the awards committee.

"The fact that a city has been selected by the Council for recognition does not necessarily mean that it is a quiet city," Mr. Washburn emphasized. "It means that the city recognizes the noise problem and has undertaken to combat it through organized effort and education to reveal the ill effects of unnecessary noise. Also that it strives to enforce its anti-noise ordinances. Some of these cities conduct continuous programs, the results of which may not always be noticeable because traffic, industrial, home and other noises, particularly those from mechanized equipment, are on the increase. However, if it were not for their efforts the clamor would undoubtedly be worse."

Public Health Meeting

(Continued from page 65)

plemented the scientific sessions in bringing the latest techniques of public health to the attention of the delegates.

The American Public Health Association is the professional society of more than 12,000 men and women in public health work in the United States, Canada, Mexico and Cuba. The annual meeting is the largest assembly in the world of public health workers. More than 400 speakers and discussants participated in the sessions, workshops and panel discussions.

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THE INDUSTRIAL Nurse

EDITOR

ROSAMOND J. WEBSTER, R.N., A.M., Ph.D.

Examination of Food Handlers

MANY plants maintain cafeterias for their employees. Others are engaged in the processing of food products. The question often arises whether it is essential to examine physically all workers who, in one way or another, are engaged in the handling of foods intended for human consumption. While a preemployment physical examination and a periodic examination have their distinct merits, in the case of food handlers the question of examinations arises because of the mistaken belief that certain communicable diseases can be transmitted to consumers of food products previously handled by an infected individual.

A definitive answer to this question has been given by the Commissioner of Health of Baltimore, Maryland. An ordinance had been introduced intended to require all food handlers to be medically examined. The Commissioner wrote as follows:

(1) The proposed ordinance is based on a fundamental lack of knowledge on how the communicable diseases are spread;

(2) The proposed ordinance will require a tremendous amount of useless wasted effort and great expense;

(3) The proposed ordinance will give a false sense of security, because a person may be ill up to 30 days before the examination or may become promptly ill immediately after the examination and remain so for a period of six months, which means in effect that the certificate required from the physician in the ordinance could become meaningless on the day following its issue because of the suddenness with which a communicable disease may arise within an individual;

(4) The proposed ordinance is unnecessary as a health protection because of the present sanitary control of food handling in the city so far as the spread of communicable diseases is concerned; chiefly because practically none of the communicable diseases can be spread by food. For many years there has been lack of widespread knowledge that the venereal diseases are never spread by food; indeed, it is reasonable to say that they are practically never spread except by sexual contact or kissing;

(5) The proposed ordinance goes contrary to the best scientific experience of all up-to-date modern health departments in this country and in Europe. These health departments fall into two classes. First, and Baltimore is in this group, health departments for communities that have never had this type of ineffective legislation based on misunderstanding of the epidemiology and spread of communicable diseases. Second, health departments which had legislation of this type and have rescinded similar ordinances or regulations after most careful studies, and hundred of thousands of examinations of food handlers, which they have found to be ineffective in the prevention of disease, and excessively costly in time and appropriation.

United States Up Front

IT HAS long been customary by many to look to Great Britain as a leader in methods of controlling industrial hazards. This is understandable in view of the fact that the factory system was developed in that country before it did to any extent in the United States. But, in the development of the industrial health services abroad, the emphasis has largely been placed on factory inspection, and mostly from a safety point of view. In addition, dependence has been placed on health care by industrial medical officers.

In these aspects of industrial health, Great Britain has been a pioneer and has done a fine job. It is now being recognized, however, that in the area of what we term industrial or occupational hygiene, no such service exists at the present time. It is interesting to read a description of methods in the United States as viewed by a British industrial medical officer. In "The Lancet" for September 6, 1952 (published in London) a fairly full description is given of what is being done in the United States to protect the health of workers, and to

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carry on research in industrial hygiene problems.

A quotation from this article is as follows: "A visiting factory inspector or nurse may be the first to discover a possible toxic hazard. The industrial physician (employed by the state where the plant is located) may then visit the factory and, by studying the environment, talking with management and workers, and making clinical and laboratory examinations of those likely to be affected, decide whether a health hazard exists. Chemists and engineers then survey the factory, taking air samples in different parts, and measure the amount of toxic substance in the air. If a health hazard exists, the correct preventive action can be determined in the light of the known facts. In this the engineer, with his special knowledge of exhaust ventilation and other protective devices, plays a large part." Apparently the industrial hygiene development in the United States, especially since World War 1, has made a deep impression on the British. We should do everything possible and necessary to maintain our present progress.

Chromate Workers

AN ABNORMALLY high rate for cancer of the respiratory system was demonstrated in a study published in 1948, covering workers in the chromate-producing industry. In 1950–51 the U. S. Public Health Service made an engineering study of the working environment in seven plants producing chromates in the United States. In six of these establishments detailed medical studies were made of the workers. Sickness among these white male chromate workers was compared with that of a large group of industrial workers. It was observed that the annual number of cases of sickness and non-industrial injuries per 1,000 white males was 116.3 for chromate workers and 108.4 for other workers. For all specific causes except cancer, the chromate workers had frequency rates that were not greatly different from other workers.

Cancer, with a rate of 7.1 for chromate workers compared with 0.7 for workers in other industries, stands out as markedly in excess for chromate workers. The frequency of sickness among chromate workers has shown a trend downward during the past five years. The most marked decline has occurred among respiratory diseases. Non-white chromate workers under 55 years of age had a higher rate for sickness and non-industrial injuries than had the white workers. For cases lasting 8 days or longer the former had a frequency rate of 156.7 per 1,000 compared with 86.2 for the latter.

During the 9 year period 1940–48, the average annual death rate per 100,000 males aged 15 to 74 years for all causes was 1,503.1 for chromate workers and 927.8 for

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the corresponding male population of the United States. For all causes except cancer, the death rates were 923.6 and 797.5 respectively. For cancer, all sites, the actual number of deaths of chromate workers was approximately four and one-half times the number that would have been expected had the cancer rates for all males in the United States prevailed. When cancer of the respiratory system was observed separately for chromate workers, nearly 29 times as many deaths as were expected were found. Some jobs are still quite hazardous.

Investigating Complaints and Rumors

IT FREQUENTLY happens that workers are disturbed, because of unfounded rumors, about false or inadequate reports concerning medical findings. Some physicians and industrial nurses may fail to take into account the psychological reactions of the worker who reports for a periodic check-up, or for treatment of an injury. He may secretly harbor the fear that he is ill, that his heart is not functioning properly, even that he has cancer. Steps that are indicated, of course, include full and frank explanation of symptoms and findings, plus adequate interpretation and discussion of the implications of the findings or the injury for which treatment is being given.

An instance of false rumors and how they react was recently reported by a government official. While it may have no direct bearing on the nurse-worker relationship, it points up the necessity of following through on rumors that disturb employees and determining whether or not there is some basis to them. If so, and the health and welfare of the staff are concerned, remedial measures can be taken.

The story is that of a newspaper item which found its way into the Congressional Record and related to an office secretary who reputedly resigned because there was no work that was assigned to her. Investigation revealed that the alleged incident, if it happened, must have occurred six years prior to the news report. The office in which the supposed secretary was reported to be working had been closed for several years. Actually the reason why, six years previously, a secretary had not been given work to do was because Congress had not appropriated money for the agency in which she was supposed to have been working. Irrespective of such a situation, stories and rumors, tales and presumed authentic reports are spread by word of mouth from one worker to another. Sometimes these tales reflect the high quality of service in the medical department. At other times, while their work may be of the best, the attitude of physician or nurse may be purely professional and some workers cannot appreciate such an approach. The result—gossip that has no validity; rumors that have no basis.

Mental Reactions of Workers

A LEADING American psychiatrist concerned with the problem of rehabilitation of injured and ailing workers states as follows: "The ability and desire to work are generally regarded in our culture as presumptive signs of good health and a well-integrated personality. Impairment or loss of this ability and desire usually lead to loss of self-respect and social status."

Evidently the ability to work and the desire to work are of major importance in maintaining mental and physical health, self-respect and acceptable social status. A challenge to industrial nurses and other service and supervisory personnel in industrial and commercial establishments lies in the ability they show in determining which workers are unhappy at their tasks and even hate the work they are doing. Sometimes the kind of job may not be the fundamental cause, but rather the physical conditions under which the work is being done, and the character of the immediate supervisor or boss.

Of course, if a worker is under various pressures and is facing serious problems in his social and family life, he may find many reasons for hating his work. For one thing, he is tied down to the necessity of reporting on time and fulfilling his job responsibilities throughout the work day and the work week. His mind may be occupied with an ailing wife or child; a misbehaving youngster; financial problems due to overspending and over-

extension of credit in the purchase of an automobile, a house, television, etc. Such problems really may be at the base of a dissatisfied worker's reactions to his job, the supervisor or employer. His surliness, sharpness, or poor work record may have no basis in the active job, working conditions, or wages received.

This is an area where intelligent and understanding industrial nurses, if no other properly prepared person is available, can get at the immediate causes of certain mental reactions of workers. A bit of mental delving, an analysis of the problem and some advice on how it can be dealt with or even solved can turn a troubled, dissatisfied worker into one who performs satisfactorily for the employer, and in the long run, for himself as well.

Has There Been Progress?

A LEADER in the field of treating heart disease writes that, despite the increase in the prevalence of heart disease, physicians and patients can look back over the last 40 years with much satisfaction. What is more important, they can look forward to the next 40 years with hope and confidence.

Forty years ago, when this outstanding physician was beginning his interneship, cardiology was essentially unborn. In fact, the cases of most victims of coronary disease were not diagnosed prior to 30 or 40 years ago. Reasons for failure to recognize such diseases included ignorance of physicians relating to diseases of the heart; lack of methods of study; electrocardiogram under development; non-use of X-ray machines; and other failings in diagnostic procedures. As in other diseases, we have records of an apparently marked increase in diseases of the heart. The reasons are several—better and more accurate diagnosis, and longer life span and therefore an aging population subject to cardiovascular diseases.

An outstanding fact is that much research work has been carried on for the past 25 and more years on diseases of the heart. One category should before long begin to decline sharply, and that is cardiovascular disease due to syphilis. Rheumatic heart disease and bacterial endocarditis are also benefiting from the use of newly available therapeutic agents. The organization of research by various medical schools, hospitals, and the federal government will undoubtedly lead to a better understanding of the cardiac diseases, and the development of effective means of treating them. We will continue to face an increasingly aging population with a comparatively high incidence of cardiac damage. But, even so, many who have defective hearts are able to do a full day of work, and this valuable source of manpower need not be shoved aside when the skills necessary in industry are in short supply. Progress has been made, and continues to be made, in the medical, surgical, pharmaceutical and other areas in treating heart diseases.

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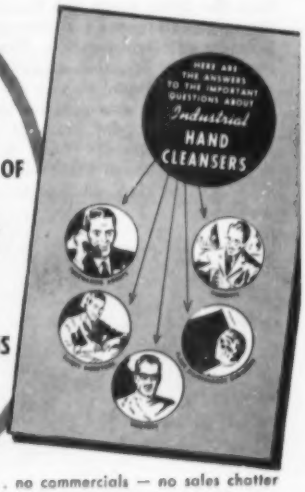

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SKID-PROOF NEOPRENE COATING

Use Key # 655 on Inquiry Card on page 77

A NEW type of neoprene coating for floors, providing a skid-resistant surface and all-weather protection for the floor, is offered by the Gates Engineering Co. The Gaco liquid safety coating may be applied to concrete, marble, wood, or metal to prevent slipping on stairs, catwalks, ramps, floors, sidewalks, oily spots and inclines. It withstands weathering and resists oils, chemicals and heat.

The liquid neoprene may be applied by brush over old coatings. Before the surface has dried, Gaco grit is poured over the coating to form a granular surface that provides excellent traction. If a bare grit surface is not desirable, an additional thin coating of the liquid may be applied. The product will dry overnight and the finished surface will not peel, crack or chip. The Gaco liquid neoprene comes in cans and requires no stirring. Gaco grit is available in three sizes and comes separately packaged.

MODERN WARNING STAND

Use Key # 656 on Inquiry Card on page 77

NEW Senior-Size "A" Stand is the latest warning sign for safety at approaches to work areas. Highway superintendents asked for an extra-large warning sign, because regular "Men Working" stands often are not visible to bus drivers and cab truck operators. Eastern Metal of Elmira, Inc., now offers a heavier and larger 38-in. high Senior-Size "A" Stand for greater visibility (shown at left). The same popular features of its Regular "A" Stand (at right) are incorporated in the new unit. It is compact, light-weight, easy to store, quickly assembled, holds two warning flags, and will not blow over in heavy winds or backwash of passing traffic. Eight different legends are available. Signs are sprayed with hot baked flexible enamel on heavy gauge bonderized steel. For clarity, legends are silk-screened; they may be reflectorized for 24 hour visibility—at night, in rain or snow. Besides warning signs, Eastern Metal carries a complete line of highway signs in U. S. Dept. of Commerce and States' Official Uniform Designs. Special sign equipment includes heavy cast aluminum street signs, U-type steel posts, aluminum sign bolts, and stable, durable pipe-and-base stands.

NEW POWERFUL HANDLAMP

Use Key # 657 on Inquiry Card on page 77

THE GS Model 22 is a durable 7½ volt powered handlamp. It may be used anywhere, as a trouble, work or emergency light, either indoors or outdoors, for shop, plant, laboratory, hospital, hotel, truck, auto or home use.

The unit is fitted with a rubber grip handle, two way fingertip switch control, 3 C.P. on low beam and 21 C.P. on high beam. (Sealed beam available.) It has a non-corrosive aluminum bracket, chrome plated head and reflector, 6" adjustable head. It is available from General Scientific Equipment Co.

CHEST-MOUNTED FACESHIELD

Use Key # 658 on Inquiry Card on page 77

IMPROVED vision, elimination of "dead air" space, and relief from binding discomforts are a few of the advantages attributed to a new protective faceshield assembly announced by the Mine Safety Appliances Company. Freedom of movement allowed by the new face protector also reduces fatigue, and the new assembly has received special endorsement by women workers because it eliminates the problem of mussed hair-dos.

Called the MSA Chest-Mounted Faceshield, it is comfortably supported by easily adjusted neck and chest straps which provide balanced weight distribution. A soft pliable leather pad rests on the chest without pressure or binding. The ready adjustment feature is carried over to the visor itself to provide maximum vision and protection while it can be set at any desired angle, height or distance. A metal hinge device enables the worker to make adjustments to individual requirements. One of the important features is the complete relief from head strain which is provided by the assembly.

When necessary, visors are easily replaced. Convenient snap fasteners permit quick and easy installation. The standard model of the new faceshield is supplied with a clear Chipruf Visor 8" long by .040" thick. Chipruf visors are available in various sizes for impact resistance, Chempruf visors for chemical splashes, and metal screen visor for hot operations.

AIR-CUSHION SAFETY SHOES

Use Key # 659 on Inquiry Card on page 77

AIR-CUSHION innersoles, made of genuine foam latex, are new improved features of several safety shoe styles manufactured by the Safety First Shoe Company, pioneers of the industry.

Three smartly styled dress shoes for executives and foremen feature the new innersoles, which are also included on several types of regular work shoes. The foam latex construction consists of thousands of tiny air cells which actually "breathe" to provide resilient, protective comfort under the foot. It makes possible a degree of safety shoe comfort not obtainable with ordinary leather innersoles.

These Safety First shoes are stocked in a varied range of sizes and widths, priced to cost less than any safety shoe with comparable specifications. For construction details and color photographs of the new air-cushion safety shoes, use the Readers Inquiry Card.

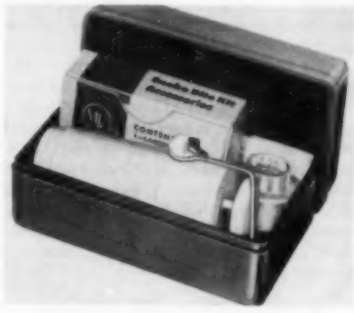
NEW FIRE PROTECTIVE TRANSFER PUMP

Use Key # 660 on Inquiry Card on page 77

DESIGNED for complete safety from the bottom of the suction tube to the top of the discharge nozzle, the new Protectoseal Transfer Pump provides effective protection against explosion and fire hazards in the movement of hazardous liquids from receiving drums to use containers.

Three flame arrestors are built into the pump and are an integral part of it. These are placed at the exact points necessary to prevent an explosion of vapors,—at the spout, above the bung adaptor and at the strainer inlet within the drum. In addition, the pump provides for vent and pressure relief through protected openings. Every detail of design and construction has been engineered to secure complete safety for the operator as well as the building in which the transfer is made.

The pump is self-priming and is constructed of special aluminum alloy with a brass telescopic tube. It is quickly and easily attached to the drum by hand swivel grip connectors and the telescopic tube permits pumping from either the side or end opening of 30 gallon or 55 gallon drums. Pumping speed is 5 gallons per minute,—fast enough for filling small containers, yet sufficiently slow to prevent sudden overflows. Tested and Approved by Underwriters' Laboratories, Inc., and Associated Factory Mutual Fire Insurance Companies.



NEW SNAKE BITE KIT

Use Key # 661 on Inquiry Card on page 77

THE new, improved Saunders' Snake Bite Kit, adapted and packaged especially for the Unit System of first aid is now being introduced under exclusive rights by Medical Supply Company. The kit features the patented positive-action Saunders' venom suction pump which provides the proper suction to withdraw venom and can be quickly administered by the victim alone if necessary.

The complete kit, which is compactly packaged in a plastic case contains the following: tourniquet for controlling blood flow; lancet for opening fang punctures; ammonia inhalants for shock; iodine swabs for painting wound area; adhesive bandages and a Saunders' venom-suction pump with adapters for treating three sizes and types of areas where a snake might strike a person's body. The kit may be easily carried either in a standard Unit System first aid kit, in the pocket, or on the belt in a special MSCo carrying case.

Medical Supply Company is also introducing a companion first aid kit as equipment for field workers to carry personally. It takes up little space in a Unit System first aid kit, or as a pocket unit, or carried on the belt in a MSCo carrying case, yet it includes all the necessary items for first aid for various emergencies in the field.

ROTARY SNOW PLOW

Use Key # 662 on Inquiry Card on page 77

OPERATING on the same principle as large rotary snow plows, the Jari Jr. Rotary Snow Plow makes an easy job of snow removal from walks and driveways. Self-propelled, this light yet powerful unit clears 4,500 square feet and handles up to 18 tons of snow per hour.

A rotary rake breaks up the snow, which is thrown through a casting chute adjustable for height and distance. A clean path 16 inches wide is cleared in one pass. Two-wheel drive providing positive forward movement is obtained by hardened steel pinions engaging notches in specially developed semi-pneumatic rubber tires. An independent clutch permits starting the 4-cycle Briggs and Stratton engine without load.

Extra attachments are available so that the unit may be converted quickly for use as a power scythe with 28-inch sickle bar, and as a power mover with 20-inch reel.

PORTABLE SCINTILLATION COUNTER

Use Key # 663 on Inquiry Card on page 77

THE Model 111 "Scintillator" is a portable Scintillation Counter having 100 times the sensitivity of the best Geiger Counter. It is ideal for prospecting, civil defense and scientific use. It can be operated from a plane or a moving vehicle. The entire instrument is contained in the probe which weighs only two pounds. The probe is completely water-proof and tropicalized. The ranges of the instrument are .05, .5 and 5 milliroentgens per hour and it is accurate within 5% of ¼ full scale reading. The battery box is carried on the belt and weighs less than four pounds. It has very long battery life and is so simple to operate that it can be used by untrained persons. It is made by Precision Radiation Instruments Co.

"ROLL ALONG" LADDER

Use Key # 664 on Inquiry Card on page 77

THE Dayton "Roll Along" Safety Ladder is designed for service wherever an easily moved step ladder is required. The "Roll Along" feature provides effortless movement of the ladder in any direction, made possible by the 3" Ball Bearing Rubber-tired Swivel Casters which are fitted to the back standards. When ladder is occupied, the weight of the workman permanently holds the ladder stationary. The front standards are equipped with Steel Ferrule Type Safety Shoes with Rubber Suction Grip Treads which are renewable.

Made by Dayton Safety Ladder Co., the "Roll Along" Ladder has a wide top shelf for holding tools, boxes, etc. It has an auxiliary platform which gives 9½" additional height when needed; this folds back into main platform when not in use. The ladders are especially adapted for use in stores, stock rooms, filing vaults, blueprint rooms, stationery storage rooms, libraries, and numerous other locations. They are available in three different sizes: 3 ft., 4½ ft., and 6 ft. (height from floor to platform). The picture shows the six-foot size in use and illustrates the freedom of both hands while working from the rail-guarded platform.

RADIATION EXPOSURE METER FOR CIVILIANS

Use Key # 665 on Inquiry Card on page 77

THE Atometer is a small, easy to use, low cost instrument for the estimation of gamma radiation in the event of an atomic disaster, suitable for use by the civilian population. Made by Magnex Corp., it is 2 inches long, ¾ inch in diameter, and weighs 1 ounce, and contains a chemical solution which changes color when exposed to gamma radiation. The degree of exposure is determined by matching the color of the liquid against a color chart printed on the outside of the device.

Approximately ⅓ of the surviving casualties of an atomic bombing would suffer chiefly from radiation sickness. The Atometer is a source of information about a person's exposure to radiation that may prove of great value in assisting a doctor to make prompt diagnosis and prescribe appropriate treatment, and thereby reduce the number of those fatally injured.

In addition, the Atometer has a definite psychological effect on persons who have not been exposed to significant amounts of radiation. Assurance that dangerous exposure has not occurred will permit a person to concentrate on his emergency duties instead of contributing to mass panic and the swamping of already overburdened hospitals and First Aid Stations.

The principles leading to the development of the Atometer were established in the course of work done under contracts with U. S. Army Chemical Warfare Service. Further development was carried out in close consultation with the Federal Civil Defense Administration. The F.C.D.A. has distributed to State and local civil defense units Bulletin No. TB-11-4 which contains a condensation of a report on the Atometer prepared by the U. S. Bureau of Standards, confirming that the Atometer is satisfactory for its purpose. The instrument has been tested under actual conditions of use at the Atomic Energy Commission's proving grounds in Nevada and the Pacific.

ZIPPERED WORK GLOVES

Use Key # 666 on Inquiry Card on page 77

ARMOR Grip work gloves, made with closed, flexible metal zippers permanently bonded to fingers and palms in synthetic rubber, provide positive gripping action and long wearing qualities along with maximum pliability.

The Surety Rubber Co., in their new line of Armor Grip gloves, mittens and palm guards is providing the worker a multiple safety factor against impact, cutting and abrasive wear; and the extra service life will save many dollars for the users.

The new work gloves are manufactured in all sizes and styles for jobs requiring maximum protection for palms and fingers.

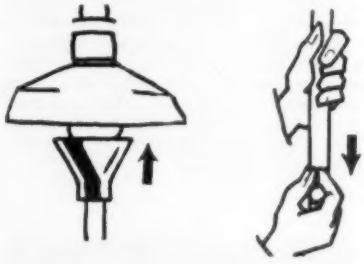
NEW MASK AND SHIELD

Use Key # 667 on Inquiry Card on page 77

THIS featherweight Lumarith plastic mask and cotton gauze filter is very effective for numerous light dusts and chipping hazards as encountered in industry, laboratories, farms, the home and workshop.

It protects nose, lungs, face and eyes against nuisance dusts, chips and particles in all types of light, non-toxic work and is available from General Scientific Equipment Co.

The filter pad consists of cotton and sanitary gauze specially treated for softness and is replaceable. The GS No. 84 Mask and Shield is low in cost, and extra filters are available.



LIGHT BULB CHANGER

Use Key # 668 on Inquiry Card on page 77

FOR the safe and easy changing of lamps in ceiling fixtures, the Lumidor Mfg. Co. has developed a five-foot extension changer that eliminates the breaking off of bulbs in the sockets. There are no springs or fingers to force over the bulb. The one head will fit any size incandescent bulb from 15 to 1500 watts. Electricians and maintenance men can safely change bulbs from floor level.

The bulb holder is made of rubber in a funnel shape. The holder is merely placed against the bulb, without exerting any pressure. A lever at the end of the rod operates a vacuum cylinder which creates a vacuum between the bulb and the holder. This pressure is sufficient to hold the bulb while it is being unscrewed. The device is suitable for all types of installations: stores, factories, schools, offices, warehouses, garages, apartments, theaters, etc. The length of the handle can be increased by adding extra extensions.

FREE BULLETINS & CATALOGS

As a convenience to executives, these new publications of manufacturers are offered by the Reader Service Department of SAFETY MAINTENANCE & PRODUCTION. To obtain copies write in the key numbers on the free-postage card below.

FIRE PROTECTION

Buyers' Guide for Fire Extinguishers .. 300
Fyr-Fyter Co. A new indexed 40-page guide for fire extinguishers and accessory devices illustrates protective equipment for all types of hazards, describes applications, special features, construction details and specifications. Helpful reference material includes the meaning of Underwriters' classifications, chemistry of fire, operation of extinguishers, and a chart for selecting the proper extinguisher for particular hazards.

Fire Fighting Film 301
Mine Safety Appliances Co. This 4-page bulletin gives full details on a new 25-minute sound motion picture, "You Bet Your Life," a non-commercial film showing the need for respiratory protection by firemen. The bulletin also tells how the film may be obtained for showing to interested groups.

Safety Cans 302
Protectoseal Co. A full line of safety containers for the dispensing of flammable liquids is described in this 2-page bulletin. Approved by UL and FML, the metal containers have self-closing caps and a flame baffle. The bulletin includes construction data, styles and sizes available.

Emergency Exit Devices 303
Von Duprin Co. This 2-page bulletin describes and illustrates the type NC (Narrow Concealed) panic bar hardware for single or double doors 1¾ inches thick. The bulletin gives full specifications for the device and for the type of door it will fit.

PERSONAL PROTECTION

Cup-Type Goggles 304
Fendall Co. The cup-type goggle, to provide eye protection for chipping, grinding, riveting, welding, dust hazards, etc., is described in a 4-page bulletin. Four basic types of clear and colored goggles are illustrated and described in detail, indicating the kinds of hazards for which they are suitable. The bulletin also gives full information on the safety and optical properties of the glass lenses.

Dynel Work Clothes 305
Mine Safety Appliances Co. The line of ChemKlos work clothes made of the new synthetic fiber, Dynel, which resists acids, caustics, wear, moths, mildew, shrinkage and tearing, is described in this 4-page bulletin. A sample of the fabric is included and construction features of the shirts, trousers and coveralls are given.

Foot and Shin Guards 306
Safety First Supply Co. A 4-page bulletin illustrates and describes the various types of toe, foot, shin and knee guards. Made from aluminum alloy, steel, or fibre, the guards protect the wearer from falling, rolling or flying objects in steel mills, foundries, mines, aircraft factories, oil refineries, packing houses, railroads, etc.

LADDERS & SCAFFOLDS

Tubular Steel Scaffolds 307
Bil-Jax, Inc. This folder shows the basic units for making tubular steel scaffolds. Detail drawings picture the use of insert pins to erect scaffolding to any height desired and also the cross brace locks. The folder includes a list of typical applications and photographs of scaffolds in use.

Scaffolding Equipment 308
Wilson-Albrecht Co., Inc. A new illustrated folder on WACO steel scaffolding is divided into three sections: maintenance scaffolding, sectional steel scaffolding, and allied equipment such as material hoisting towers and elevators. Applications and specifications are covered, together with special "package" units for specific types of jobs.

Ladder Shoes & Stabilizers 309
Jon-Ne-Fut Mfg. Co. This illustrated 1-page bulletin describes a ball-and-socket safety shoe for ladders that are to be used on a level surface and a ladder stabilizer for use on slanting surfaces. The ball-and-socket principle allows the safety foot to fit the contour of the surface at all angles.

Woven Wire Slings 310
Cambridge Wire Cloth Co. A new 15-page catalog for "Gripper" woven wire slings offers complete data on the three major specifications to which the slings are made, information on recommended uses and loading data, and full listings of prices for standard sizes.

Industrial Trucks 311
Clark Equipment Co. "Serves You Right!" is the title of an 18-page review of the Clark fork-lift trucks, powered hand trucks and industrial towing tractors. It also outlines the service offered to customers in planning materials-handling systems, training of service and maintenance personnel, and world-wide service facilities.

ELECTRICAL MAINTENANCE

Cleaning of Electric Motors 312
Fine Organics, Inc. This reprint of an SM&P article offers safety suggestions on how to clean motors and generators, with emphasis on the use of safer solvents, both from the standpoints of fire and health hazards. The 4-page bulletin also adds detailed information on several types of blended solvents suitable for electrical maintenance.

Electrical Connection Sealer 313
James R. Kearney Corp. The safety features of a new, pliable high-dielectric compound for sealing electrical connections, as a replacement for tape, are outlined in this 2-page bulletin. It emphasizes that the compound is pliable for fast application, chemically inert, and has high insulating qualities and very low flammability.

DUST & FUME CONTROL

Lead Oxide Dust Collection 314
American Wheelabrator & Equipment Corp. The collection of lead oxide dust in the manufacture of storage batteries is the subject of this report, which shows how one company uses cloth-tube-type dust collectors to control dust and fume in battery plate cutting, refining operations and conveyor lines.

Crane Cab Air Conditioners 315
Dravo Corp. A complete line of crane cab coolers and conditioners is described in a new 24-page illustrated bulletin. It points out that the equipment safeguards the health of crane operators and increases efficiency and alertness by removing dust, dirt, fumes, odors and by winter heating and summer cooling. Information on where and how to use the various models is included.

Manual of Exhaust Hood Design 316
American Air Filter Co. This 24-page bulletin features engineering data on dust control systems for metal working operations, such as polishing, buffing and grinding; portable & flexible shaft grinding; cast iron machining; automatic buffing and oil mist control. The booklet shows various methods of hooding dust sources and gives tables of exhaust requirements, dust concentrations, weights of collected materials, etc.

LIGHTING & ELECTRICAL

Emergency Light 317
Electric Storage Battery Co. This 4-page bulletin shows how to prevent sudden lighting failures in factories, switchboards, engine rooms, stores or places of public assembly by using a battery-powered emergency light. The unit is plugged into the lighting circuit, and when the normal current fails, the emergency light is automatically turned on.

(Continued next page)

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Free Bulletins (Continued)

Trolley Busway System 318
Feedrail Corp. A heavy-duty trolley busway power distribution system for moving electric equipment is described and illustrated in this 4-page bulletin. Among the features of the system, which provides a movable power source for the movement of cranes and hoists or for portable tools and machines, is the fully enclosed safety design of the busway to protect workers and equipment.

Snap-Action Switches 319
Micro-Switch. A new 24-page catalog of precision snap-action switches covers safety, limit and interlock types for industrial and commercial applications. Included are enclosed and sealed models, explosion-proof and splash-proof switches, auxiliary brackets, etc. Construction and operating details on each type are given.

BUILDING MAINTENANCE

Noise Barriers 320
Industrial Acoustics Co. A booklet describes the new standardized acoustic panels and tells how these panels can be used to silence noise in a wide range of industry, from power plant transformers to all phases of machinery.

Roof Protection 321
Hallemite Mfg. Co. This illustrated 4-page bulletin shows how a specially processed asphalt-asbestos material waterproofs, preserves and protects new and old roofs. Three formulations of the product for brushing or troweling are described and a chart gives the covering capacity of each type.

Floor Maintenance Machines 322
American Floor Surfacing Machine Co. This 4-page folder describes and illustrates a floor maintenance machine for scrubbing, polishing, steel wooling and disc sanding, and a water pick-up machine for wet or dry operation. The bulletin also illustrates several of the versatile attachments which can be used on the latter machine for cleaning difficult areas.

Floor Resurfacer 323
Permamix Corp. A floor patching and resurfacing material, ready mixed for use, is described in this 4-page bulletin, which points out that the material may be applied to a wet or dry surface, indoors or out, and does not require special equipment or skilled labor.

Index to Advertisers and their Agencies

Alan Wood Steel Co., *John Falkner Arndt & Co., Inc.*, Philadelphia .. 69
American Optical Co., *Sutherland-Abbott*, Boston .....Inside Front Cover
Ansul Chemical Co., *J. A. Cormack*, Milwaukee .....47 & 52

Bausch & Lomb Optical Co., *Ed. Wolff & Associates*, Rochester 11
Beacon Falls Rubber Footwear, *Fletcher D. Richards, Inc.*, New York .. 59
Bil-Jax Inc., *Chamberlin-Junk Advertising, Inc.*, Fort Wayne 72
Brady Co., W. H., *Ervin R. Abramson Agency*, Milwaukee 73

Carbisulphoil Co., *Tracy-Locke Co., Inc.*, Dallas 71
Chesebrough Mfg. Co., Cons'd., *Noyes & Sproul, Inc.*, New York 57
Chic Maid Hat Mfg. Co., Inc., *Armand S. Weill Co., Inc.*, Buffalo .. 52
Chicago Eye Shield Co., *Reincke, Meyer & Finn*, Chicago 21
Cover, H. S., *Jerry Bryant Advertising Agency*, Chicago 53

Davis Emergency Equipment Co., *United Advertising Agency*, Newark 61
Dayton Safety Ladder Co., *Strauchen & McKim*, Cincinnati 60
Detex Watchclock Corp., *J. M. Kesslinger & Associates*, Newark 48
Dickson Corporation, *F. B. Hubert*, Detroit 56
Dolge Co., The C. B., *Caples Company*, New York 71
Du Pont de Nemours Co., Inc., E. I., *Batten, Barton, Durstine & Osborn, Inc.*, New York 6

Edmont Mfg. Co., *Mumm, Mulloy & Nichols, Inc.*, Columbus 35
Fine Organics, Inc., *Sid N. Cottin Agency*, New York 63
Hild Floor Machine Co., *Cruttenden & Eger*, Chicago 47
Hood Rubber Co., *Henry A. Loudon Advertising, Inc.*, Boston 49
Hynson, Westcott & Dunning, Inc. .....Back Cover
Hy-Test Safety Shoes, Div. International Shoe Co., *Westheimer & Block*, St. Louis 1

Industrial Gloves Co., *Kirkgasser-Drew*, Chicago 62

Knapp Brothers Shoe Mfg. Corp., *Ingalls-Miniter Co.*, Boston 51

Lehigh Safety Shoe Co., *Frederick-Clinton Co., Inc.*, New York 9
Lightfoot Schultz Co., *Herald Advertising Agency, Inc., New York* 73

Marsh & McLennan, Inc., *Doremus & Co.*, Chicago 58
Martindale Electric Co., The, *Kenneth H. Kolpien*, Cleveland 68
Mine Safety Appliances Co., *Ketchum, MacLeod & Grove, Inc.*, Pittsburgh 4

Pennsylvania Optical Co., *Al Paul Lefton Co., Inc.*, Philadelphia 27
Pittsburgh Plate Glass Co., *Maxon, Inc.*, Detroit 5
Pyrene Manufacturing Co., *Gray & Rogers*, Philadelphia 37

Quabaug Rubber Co. 12

Reece Wooden Sole Shoe Co. 46

Safety Box Toe Co., *The Church Green Co.*, Boston .....40 & 41
Scott Aviation Corp., *Melvin F. Hall Advertising Agency, Inc.*, Buffalo 43
Sigma Engineering Co., *Walter DuBree Advertising Agency*, Los Angeles 64
Silicone Paper Co. of America, Inc., The, *Package Advertising Co.*, New York 3
Stonehouse Signs, Inc., *Walter DuBree Advertising Agency*, Los Angeles .....Inside Back Cover
Surty Mfg. Co., Inc., The 64

U. S. Safety Service Co., *Phillips, Reick, Fardon*, Kansas City 2

Washington Mortuary Supply Co. 50
Wilkins Co., Inc., The, *Laux Advertising, Inc.* 39
Williams Jewelry & Mfg. Co., *Jerry Bryant Advertising*, Chicago 50
Willson Products, Inc., *Beaumont, Heller & Sperling, Inc.*, Reading 7

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